APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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ZVORYKIN, A.A.

Mining Engineering

Outline of the history of Soviet mining engineering. Reviewed by S. Ya. Rackovskiy, S.M. Yasiukevich, G.N. Popov. Gor. zhur. No. 2, 1952

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ZVORYKIN, A. A.

USSR/Engineering Oct 1947
Industrial Statistics

"Technical Re-equipping of the USSR People's Economy
During Thirty Years," Prof A. A. Zvorykin, L. V. Zub-
ov, 13 pp

"Vestnik 1 Znizn'," No 10

Data on first Five-Year Plan Soviet industries multiplied
by eight times (US in the same period expanded
only 2.5 times). General account of the rapid strides
in Soviet industry. No exact production figures,
but gives comparisons in terms of percentages.
Notes of photographs show industrial might of USSR.
Views show Volkhovsk Hydroelectric Plant imeni V. I.
Lenin, Nevinnomysskiy Canal with a view of causeway.

50T32

USSR/Engineering (Contd) Oct 1947

Lenin, Nevinnomysskiy Canal with a view of causeway.
Lenin, Nevinnomysskiy Canal with a view of causeway.
Several views of steel plants, among them a shore-
Several view of Azovstal' Metallurgical Works; several
Several view of Azovstal' Metallurgical Works; several
Several view of Azovstal' Metallurgical Works; several

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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Zvorykin, A. A. and Kirzhner, D. M. "The development of the mining industry of the USSR and the productivity of its labor", in the collection entitled: Voprosy gornogo dela, Moscow, 1948, p. 369-85.

SO: U-2888, 12 Feb. 53, (Letopis' Zhurnal 'nykh Statey, No. 2, 1949).

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ZVORYKIN, A. A., Prof

Nov 48

USSR/Mining Methods
Efficiency, Industrial

"Methods for Increasing the Productivity of Labor at USSR Coal Industries," Prof A. A. Zvorykin, Dr, 3½ pp

"Ugol'" No 11 (272)

Discusses causes of stoppages and delays at coal face. Explains advantages of mechanization. Quotes figures illustrating percentage of improvement.

14/49T100

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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20732. Zvorykin, A. K istorii kizelovskogo kamennougol'nogo basseyna. Voprosy ekonomiki, 1949, No. 5, s. 36-47

SO: LETOPIS ZHURNAL STATEY - Vol. 28, Moskva, 1949

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ZVORYKIN, A

Pervootkryvateli Kamennougol'nykh Basseynov SSSR. (First Discoverers of USSR's Coal Fields) ... Moskva
(IZD-VO "Pravda") 1950.
31 P.
At head of title: Vsesoyuznoye Obshchestvo Po Rasprostraneniyu Politicheskikh I Nauchnykh Znaniy.
Bibliographical footnotes.

A lecture on discoveries of coal deposits in Russia, listing dates and locations, as well as names of discoverers. Mentioned is also the beginning of a broad development of underground coal gasification in the Soviet Union.

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[Economics, organization and planning in the U.S.S.R. coal industry] Ekonomika, organizatsiia i planorovanie ugol'noi promyshlennosti SSSR. Moskva, Ugletekhizdat, 1951. 687 p. (MLRA 6:8)
(Mining industry and finance) (Coal mines and mining)

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(54-22422)

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ZVORYKIN, A.A.; KIRZHNER, D.M.; KUNDIN, M.B.; DOROKHIN, N.G., otvetstvennyy redaktor; FEYTEL'MAN, N.G., redaktor; CHERENKOV, N.V., redaktor; ANDREYEV, G.G., tekhnicheskiy redaktor

[Economics of the coal industry of the U.S.S.R.] Ekonomika ugol'noi promyshlennosti SSSR. Izd. 2-e, perer. i dop. Moskva, Ugletekhizdat, 1954. 427 p. [Microfilm] (MLRA 8:2)
(Coal mines and mining)

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ZVORYKIN, Anatoliy Alekseyevich; KIRZHNER, David Mironovich; KUNDIN, Mikhail Borisovich; DOKOKHIN, N.O., otvetstvennyy redaktor; FEYTEL'MAN, N.G., redaktor izdatel'stva; KOROVENKOVA, Z.A., tekhnicheskiy redaktor; ALADOVA, Ye.I., tekhnicheskiy redaktor

[Production organization and planning in the Soviet coal industry] Organizatsiia i planirovanie proizvodstva v ugol'noi promyshlennosti SSSR. Izd. 2-oe, perer. i dop. Moskva, Ugletekhizdat, 1956. 483 p. (MLRA 9:12)
(Coal mines and mining)

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BERKOVICH, D.M.; ZVOKYKIN, A.A.

Some tendencies in the development of the technology of modern machine construction. Vop. ist.est. i tekh. no.1: 168-178 '56. (MLRA 9:10)

(Machinery industry)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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Some problems in the organization of wages in the coal industry. (MLRA 9:7)
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(Coal mines and mining) (Wages)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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BERKOVICH, D.M.; [redacted]

Trends in the technological development of the contemporary machine construction industry. Vop.ist.est. i tekh. no.2:207-216 '56.
(MLRA 10:1)

(Mechanical engineering) (Machinery--Constuction)

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ZVORYKIN, A.A.

Periodicity in the history of natural sciences and technology. (MIRA 11:1)
Vop. ist. est. i tekh. no.4:153-162 '57.
(Technology--History) (Natural history) (Dialectical materialism)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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2V

119-11-4/7

AUTHORS Zvorykin, A.A., and Kirzhner, D.M.

TITLE "How to Determine the Economic Effectiveness of Automation".
(kak opredelyat' ekonomicheskuyu effektivnost' avtomatizatsii)

PERIODICAL Priborostroyeniye, 1957
Nr 11, pp. 13-17 (USSR)

ABSTRACT The most important index of the economic effectiveness of automation is the degree of the increase of work productivity. This effectiveness in the field of work productivity depends on the degree of wage-intensity in an enterprise being automized.
For the determination of the economic effectiveness in the index of work productivity we can carry out the following simple calculations: We call the number of workers in the enterprise
a) before the introduction of automation in the enterprise h_1
b) after the introduction of automation h_2
and we obtain in this case-with all other conditions remaining the same-the increase of work productivity to

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$$\frac{h_1 - h_2}{h_2} \times 100\ \%$$

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"How to Determine the Economic Effectiveness of Automation".

and a decrease of wage intensity to

$$\frac{h_1 - h_2}{h_1} \times 100\ \%.$$

As second index for the determination of the effectiveness of automation serves the specific use of capital per production unit. When analysing the amount of this expenditure a certain regularity can be observed. As a rule the capital use per production unit decreases there where it is relatively low, or, where, in consequence of automation the scope of production increases essentially. The more complicated the enterprise is in technical respect and the higher the level of automation and the smaller the increase of production is, the more the capital use per production unit of the annual production will drop.
With the level of capital use also the socalled efficiency-agent of automation is connected, which shows us how much smaller the capital use is for the automation to secure an increase of the capacity of an aggregate or of machine, than the expenditures which

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"How to Determine the Economic Effectiveness of Automation".

are necessary in order to reach such an increase of the capacity of an aggregate or a machine without using automatic devices.
There is no reason to regard the coefficient of the efficiency of automation of universal importance. The most important index of the economic efficiency of automation in the USSR is the reduction of the production costs. Usually this effectiveness is characterized by a comparison of the percentage of the reduction of production costs in a non-automized enterprise. This is right, if the economic effectiveness of the same kind of processes and enterprises is considered. The percentage of the reduction of production costs with automation is different if the production costs are calculated with or without the costs of the raw-material. The distribution of the expenditures of the individual departments to the individual products is usually carried out proportionally to the wage of the basic productive workers. In cases of the automation of single processes or departments with a number of industrial branches the same principle was maintained

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"How to Determine the Economic Effectiveness of Automation".

which is used when comparing an automised with a non-automised production. This, however, is obviously uncorrect as the real expenditures of departments do not change according to the same relation with automation as do the wages.
When determining the share of the general costs of production per production unit in a non-automized or automized enterprise it is important to regard the demands for the equalisation of the quantity of production. Without this the effectiveness of an automized enterprise is artificially increased as in such a case the general costs of production (of the non-automised enterprise) refer to a smaller quantity of production than in an automized enterprise.

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ZVORYKIN, A.A., prof.; KIRZHNER, D.M.

Progressive engineers and technicians of the U.S.S.R. coal industry.
Ugol' 32 no.11:48-53 N '57. (MIRA 10:12)
(Coal miners) (Coal research)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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28(1) PHASE I BOOK EXPLOITATION SOV/1737

Zvorykin, Anatoliy Alekseyevich, Doctor of Economic Sciences, Professor

Avtomatizatsiya proizvodstva i yeye ekonomicheskaya effektivnost' (Automation of Production and Its Economic Efficiency) Moscow, Izd-vo "Znaniye," 1958. 62 p. (Series: Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy. Seriya 3, 1958, nos. 9/10) 66,000 copies printed.

Scientific Ed.: B.S. Sotskov, Doctor of Technical Sciences; Ed.: T.F. Falaleyeva; Tech Ed.: A.V. Trofimov.

PURPOSE: This pamphlet was prepared by the All-Union Society for the Dissemination of Political and Scientific Information and is intended for the general reader interested in automation.

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COVERAGE: The author of this pamphlet briefly describes the various points of view of foreign specialists on automation. He presents his own views and concepts and reviews the automatization of production processes in the USSR and abroad. Emphasis is placed on the economic aspects of the automatization of production processes. No personalities are mentioned. There are no references.

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Change in the productivity of labor under conditions of automatized production 40

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Change in the cost of product under conditions of automatized production 47
Comparison of automatized and nonautomatized production based on the length of time necessary for the recovery of capital outlays 51
Economic efficiency of automatization in relation to its level and applicability to individual branches of production 56

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NEMCHENKO, V.S.; BOCHAROV, M.D.; KRISTOSTUR'YAN, N.G.; CHERKASOV, V.I.; ANDREYANOV, V.V.; KAUFMAN, V.M.; PAKHMANOV, V.F.; ZVORYKIN, A.A., otv.red.; ANICHKOV, N.N., red.; BARDIN, I.P., red.; BLAGONRAVOV, A.A., red.; VVEDENSKIY, B.A., red.; GRIGOR'YEV, A.A., red.; KAPUSTINSKIY, A.F., red.; KOLMOGOROV, A.N., red.; MIKHAYLOV, A.A., red.; OPARIN, A.I., red.; PETROV, F.N., red.; STOLETOV, V.N., red.; STRAKHOV, N.M., red.; FIGUROVSKIY, N.A., red.; KOSTI, S.D., tekhn.red.

[Biographical dictionary of leaders in the natural sciences and technology] Biograficheskii slovar' deiatelei estestvoznaniia i tekhniki. Vol.1. A - L. Otvetstvennyi red. A.A.Zvorykin; Red. kollegiia: N.N.Anichkov i dr. Moskva, Gos.nauchn.izd-vo "Bol'shaia Sovetskaia Entsiklopediia." 1958. 548 p. (MIRA 12:4)

1. Redaktsiya istorii estestvoznaniya i tekhniki Bol'shoy Sovetskoy Entsiklopedii (for Nemchenko, Bocharov, Kristostur'yan, Cherkasov, Andreyanov, Kaufman, Pakhmanov).

(Scientists)

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ZVORYKIN, A.A.

25-2-1/43

AUTHOR: Zvorykin, A.A., Doctor of Economical Sciences, Professor, and Shukhardin, S.V., Candidate of Technical Sciences

TITLE: Force of Scientific Foresight (Sila nauchnogo predvideniya). Karl Marx in Technial Progress (Karl Marks o progresse tekhniki)

PERIODICAL: Nauka i Zhizn', 1958, # 2, p 1-6 (USSR)

ABSTRACT: A brief review of advances made in the scientific and technical fields during the last few decades. There is one sketch and one diagram.

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ZVORYKIN, A.A., prof.; KIRZHNER, D.M., prof.

Basic problems of mining engineering theory and practice. Izv. vys.ucheb.zav.; gor.zhur. no.3:3-11 '58. (MIRA 12:8)
(Mining engineering)

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ZVORYKIN, A.A., prof.; KIRZHNER, D.M.; prof.

Methods of determining the economic efficiency of automatization in the coal industry. Nauch.dokl.vys.shkoly; gor.delo. no.4: 259-266 '58. (MIRA 12:1)

1. Predstavleno kafedroy ekonomiki, organizatsii i planirovaniya gornykh predpriyatiy Moskovskogo gornogo instituta imeni I.V. Stalina.

(Coal mines and mining--Costs)
(Automatic control)

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[Creating material and technological basis of communism in the U.S.S.R.] Sozdanie material'no-tekhnicheskoi bazy kommunizma v SSSR. Moskva, Izd-vo sots.-ekon.lit-ry, 1959. 102 p. (MIRA 12:8)

(Technology)

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ZVORYKIN, A.A., otv.red.; NEMCHENKO, V.S., zaveduyushchiy red.; BOCHANOV, M.D., starshiy nauchnyy red.; KRISTOSTUR'YAN, N.G., starshiy nauchnyy red.; CHERKASOV, V.I., starshiy nauchnyy red.; ANDREYANOV, V.V., red.; GARKOVENKO, R.V., nauchnyy red.; KAUFMAN, V.M., mladshiy red.; PAKHMANOV, V.F., mladshiy red.; KOSTI, S.D., tekhn.red.

[Biographical dictionary of figures in the natural sciences and technology] Biograficheskii slovar' deiatelei estestvoznaniia i tekhniki. Otvetstvennyi red. A.A.Zvorykin. Red. kollegiia: N.M.Anichkov i dr. Moskva, Gos.nauchn.izd-vo "Bol'shaia sovetskaia entsiklopediia." Vol.2. M - IA. 1959. 467 p. (MIRA 12:7)

1. Redaktsiya istorii estestvoznaniya i tekhniki Bol'shoy Sovetskoy Entsiklopedii (for all except Zvorykin, Kosti). (Scientists) (Technology--Biography)

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ZVORYKIN, Anatoliy Alekseyevich, doktor ekonom.nauk; DUBROVSKIY, Yu.N., red.; ATROSHCHENKO, L.Ye., tekhn.red.

[Economic efficiency of production automation] Ekonomicheskaia effektivnost' avtomatizatsii proizvodstva. Moskva, Izd-vo "Znanie," 1960. 45 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.3, Ekonomika, no.34). (MIRA 13:12)

(Automation) (Labor productivity)
(Costs, Industrial)

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ZVORYKIN, Anatoliy Alekseyevich, prof.; KIRZHNER, David Mironovich; KUNDIN, Mikhail Borisovich, inzh.; RACHKOVSKIY, S.Ya., prof., otv. red.; ASTAKHOV, A.S., kand. ekonom. nauk, otv. red.; GOLUBYATNIKOVA, G.S., red. izd-va; PROZOROVSKAYA, V.L., tekhn. red.

[Economics of the mining industry] Ekonomika gornoi promyshlennosti. Izd.3., perer., dop. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1961. 439 p. (MIRA 14:9)
(Mineral industries)

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Zvorykin, Anatoliy Alekseyvich

Ekonomika gornoy promyshlennost! [by] A.A. Zvorykin, D.M. Kirzhner [i] M.B. Kundin. Izd. 3., perer: dop. Moskva, Gosgortekhizdat, 1961.
439 p. tables.
Bibliography: p. 432-433.

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ZVORYKIN, A.

Automation of capitalist production is a disaster for the workers. Sots. trud 6 no.5:30-40 My '61. (MIRA 14:6)
(Automation--Economic aspects)
(Labor and laboring classes)

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"Opredeleniye kul'tury i mestmaterial'noy kul'tury v obshchey kul'ture."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.

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Ekonomika ugol'noy promyshlennosti SSSR (by) A.A. Zvorykin, D. M. Kundin. I zd. 2, perer I dop. Moskva, Ugletekhizdat, 1954. 427 p. tables. 23 cm. Bibliography: p. (425)

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427 p. tables. 23 cm.

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ZVORYKIN, A.A.; MILONOV, Yu.K., otv. red.

[History of technology] Istoriia tekhniki. Moskva, Izd-vo sots.-ekon.lit-ry, 1962. 772 p. (MIRA 16:9)
(Technology)

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CHERNYSHEV, Vladimir Ivanovich; ZVORYKIN, A.A., otv. red.; KLESHCHINOV, M.A., red. izd-va; POLYAKOVA, T.V., tekhn. red.; GOLUB', S.P., tekhn. red.

[From the history of technical development in the first years of the Soviet regime, 1917-1927] Iz istorii razvitiia tekhniki v pervye gody sovetskoi vlasti, 1917-1927. Moskva, Izd-vo Akad.nauk SSSR, 1962. 316 p. (MIRA 15:7)
(Industrialization) (Economic development)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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ZVORYKIN, A.A., doktor ekon.nauk, prof.; OS'MOVA, N.I., nauchnyy sotr.; CHERNYSHEV, V.I., kand.tekhn.nauk; SHUKHARDIN, S.V., kand.tekhn.nauk; MILONOV, Yu.K., kand.ekon.nauk, otv.red.; BAKOVETSKIY, O., red.; STREPETOVA, M., mladshiy red.; MOSKVINA, R., tekhn. red.

[History of technology] Istoriia tekhniki. [By] A.A.Zvorykin i dr. Moskva, Sotsekgiz, 1962. 772 p. (MIRA 15:8)

1. Akademiya nauk SSSR. Institut istorii yestestvoznaniya i tekhniki.

(Technology)

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SHUKHARDIN, S.V.; ZVORYKIN, A.A., redaktor; NEMCHENKO, B.C., redaktor; ZELENKOVA, Ye.V., tekhnicheskiy redaktor.

[Georg Agricola] Georgii Agrikola. Moskva, Izd-vo Akademii nauk SSSR, 1955. 205 p. (MLRA 9:5)
(Agricola, Georg, 1494-1555)

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BROMBERG, Viktor Aleksandrovich; GAMAYUNOV, Nikolay Ivanovich; ZVORYKIN, Aleksey Dmitriyevich; KUDRYAVTSEV, Vitaliy Vasil'yevich; TEVEROVSKIY, Yevgeniy Ivanovich; EPSHTEYN, Lev Abramovich; SHIROKOVA, M.M., tekhn. red.

[Mechanization of the manufacture of electrical insulating materials of winding insulation, and drying as well as saturating operations] Mekhanizatsiia proizvodstva elektroizoliatsionnykh materialov, izoliatsionno-obmotochnykh i sushil'no-propitochnykh rabot. By V.A.Bromberg i dr. Moskva, Gos. energ.izd-vo, 1961. 99 p. (MIRA 15:2)
(Electric insulators and insulation)

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Protecting magnesia cement objects from humidity. A. Ya. Zvonkikin. *Bull. Inst. polytech. Ivanovo-Voznesensk* **15**, 201–6(in German 206–7)(1930).—S describes tests on different plates which were made from magnesia cement treated with varnish (boiled linseed oil) to ascertain the penetration of humidity into these objects. The tests are tabulated and show that plates satd. with varnish are fairly well protected against humidity.

M. V. Kosmodiy

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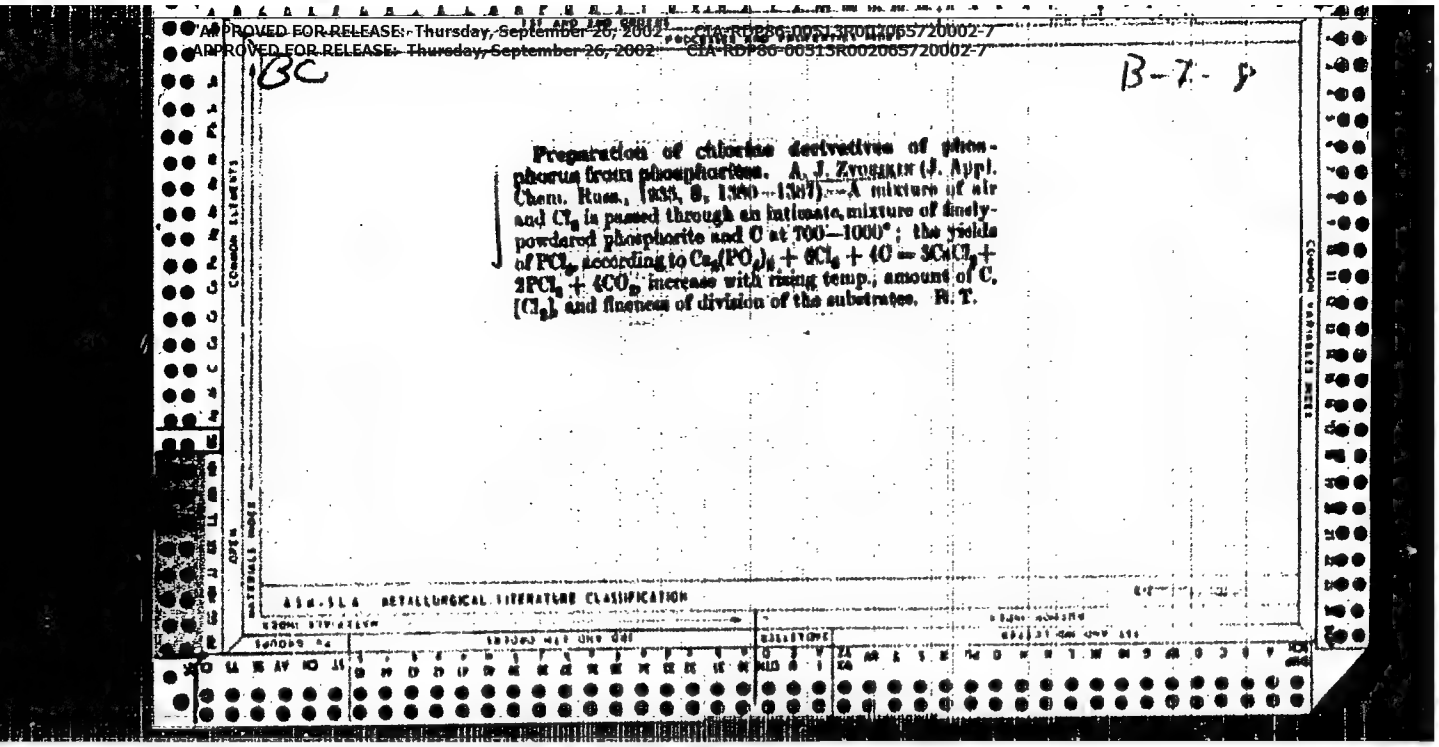

18C

B-7-9

Preparation of chlorine derivatives of phosphorus from phosphorites. A. I. Zvyagin (J. Appl. Chem. Russ., 1935, 8, 1380—1387).—A mixture of air and Cl_2 is passed through an intimate mixture of finely-powdered phosphorite and C at 700—1000°; the yields of PCl_3 according to $Ca_3(PO_4)_2 + 6Cl_2 + 4C = 3CaCl_2 + 2PCl_3 + 4CO_2$ increase with rising temp., amount of C, $[Cl_2]$ and fineness of division of the substrates. R. T.

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION

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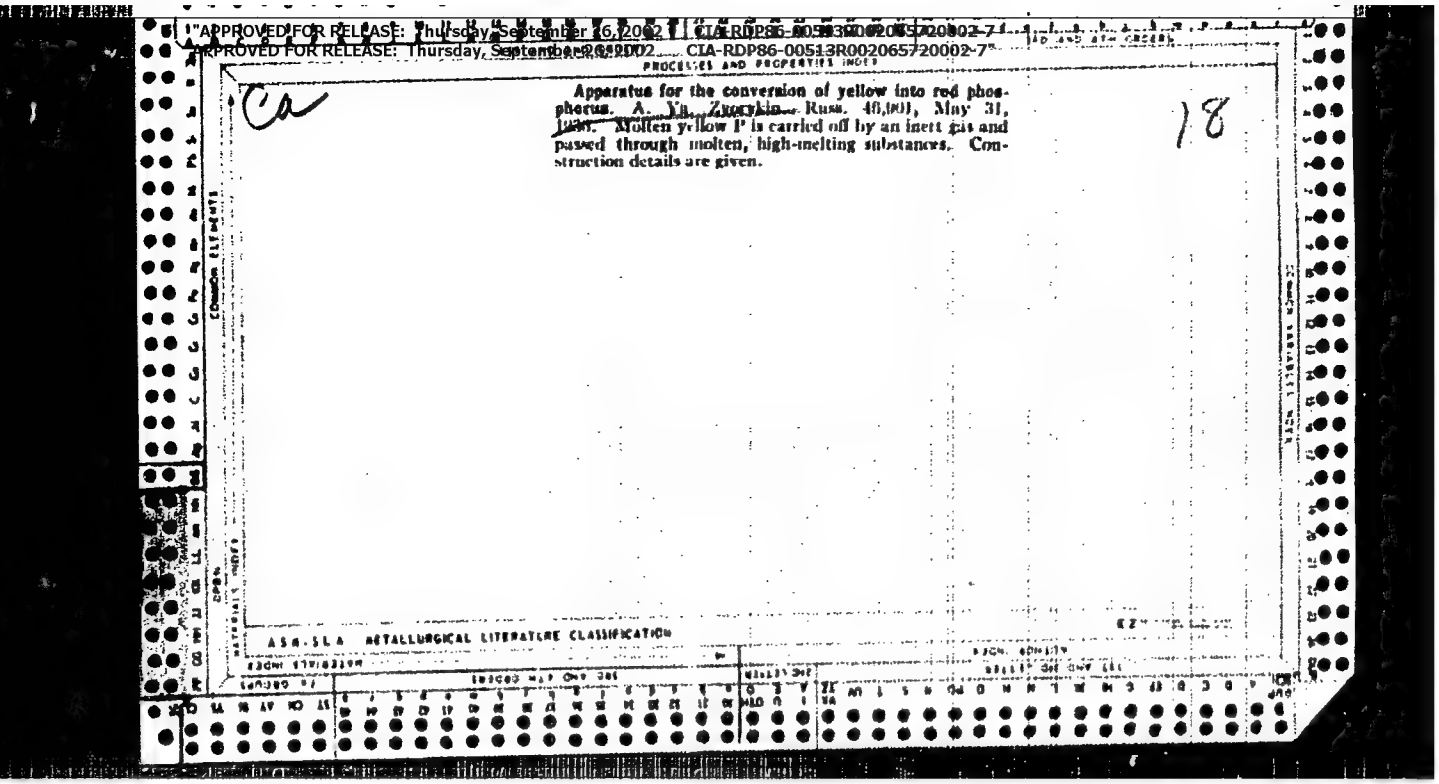

PROCESSES AND PROPERTIES INDEX

Ca

18

Apparatus for the conversion of yellow into red phosphorus. A. Ya. Zinovkin. Russ. 46,801, May 31, 1937. Molten yellow P is carried off by an inert gas and passed through molten, high-melting substances. Construction details are given.

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Decomposition of sulfates with chlorine. A. Ya. Zvonukin, *J. Applied Chem.* (U. S. S. R.) 9, 1-8(1936); cf. C. A. 30, 1308⁹.—Finely ground Ca, Ba, Sr and Na sulfates were heated at 830-1050° in an elec. muffle furnace in a stream of Cl. Under identical conditions at 1050° the yields of $CaCl_2$, $BaCl_2$ and NaCl were 42.52, 69.2 and 75.0% theoretical. Lengthening the reaction time and increase in quantity of Cl used improves the yield. Addn. of NaCl (about 6%) to sulfates is beneficial but SiO_2 has an unfavorable effect. C is also effective but interferes with purification of products. V. A. K.

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BC

A-1

Dynamics of preparation of red phosphorus. I. A. J. Zvyagintsev (J. Appl. Chem. Russ., 1936, 9, 779—786).—Complete conversion of white into red P is attained in 15—30 min. at 400—500°. Red P, Fe_2O_3, CuO, SiO_2, U_3O_8, and Se are without catalytic action. R. T.

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PROCESSES AND PROPERTIES INDEX

Ca

6

Dynamics of red phosphorus production. I. A. Ya. Zvornikin. *J. Applied Chem.* (U. S. S. R.) 9, 771-88 (in English 780(1936)). Lab. expts. in the production of red P are described. Yellow P, with and without the addns. of catalysts, was charged into a glass-stoppered ampoule and the stopper was tightly sealed with a mixt. of Na_2SiO_3 and CaO. The ampoule, inserted into a sealed glass tube, was submerged into sand and heated in an elec. furnace at 220-500° for various periods of time. To det. the degree of allotropic conversion, the reaction ampoule was crushed, the contents were treated with CS_2, the red P was filtered off by suction through a Schott porous filter and the filter, after drying in the air and at 80° in a drying oven, was weighed. The rate of the allotropic conversion is a function of time and temp. Heating yellow P at 220-50° for 3-47 hrs. resulted in a product contg. 16.9-69% red P. Heating at 320-50° for 18-20 hrs. yielded a mixt. with 71.9-6.1% red P. A 100% conversion was effected at 400° and 500° in 1 hr. to 1 hr. and 20 min. The addns. of red P, silica gel, Fe, Fe_2O_3, Sc, U_3O_8 and CaO failed to catalyze the reaction. Increasing time and temp. increased the hardness of the red P and the intensity of its coloration from a bright red to a deep violet.

Chas. Blanc

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B C

A-1

Quaternary system K_2O-NH_3-P_2O_5-H_2O. Solid solutions in the system KH_2PO_4-$NH_4H_2PO_4$-H_2O. N. S. Domanovskaja and A. J. Zyrjanin (Kalii, 1937, No. 2, 24—29).—The 25° and 50° isotherms have been determined. The results of Askenasy and Nessler (A., 1930, 872) indicating the existence of a continuous series of solid solutions have been confirmed. D. G.

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CP

2

The solid solutions of the system potassium dihydrogen phosphate-ammonium dihydrogen phosphate-water. A. Ya. Zvorykin and V. G. Kuznetsov. *Bull. acad. sci. U. R. S. S., Classe sci. math. nat., Sér. chim.* 1938, No. 1, 195-200 (in English 201).—The soly. isotherms of the system at 0°, 25° and 50° were investigated. The presence of continuous series of solid solns. was observed and confirmed by x-ray investigation of the solid phases having a compn. KH_2PO_4 0-41.65 and $NH_4H_2PO_4$ 0-33.48%.

A. A. P.

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PROCESSES AND PROPERTIES INDEX

Gypsum problem in the Soviet Union. N. I. Buyalov and A. Ya. Zvorykin. *Ann. secteur anal. phys.-chim., Inst. chim. gén.* (U. R. S. S.) 11, 327-36 (1938). A review of the results of a geol. survey in the Western Kazakhstan with a discovery of some 300 complex salt domes and large veins of gypsum and anhydrite with recommendations for the investigation of the geochem. and petrographic properties and com. exploitation of the deposits in the light of American practice with similar deposits in Texas and Louisiana. Chas. Blanc

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CA

13

Fertilizers. A. Ya. Zyorykin. Russ. 56,095, Nov. 30, 1939. Solns. contg. 35-6% ammonium phosphate are treated with a 2-18% soln. of KCl at temps. of −5 to +65°.

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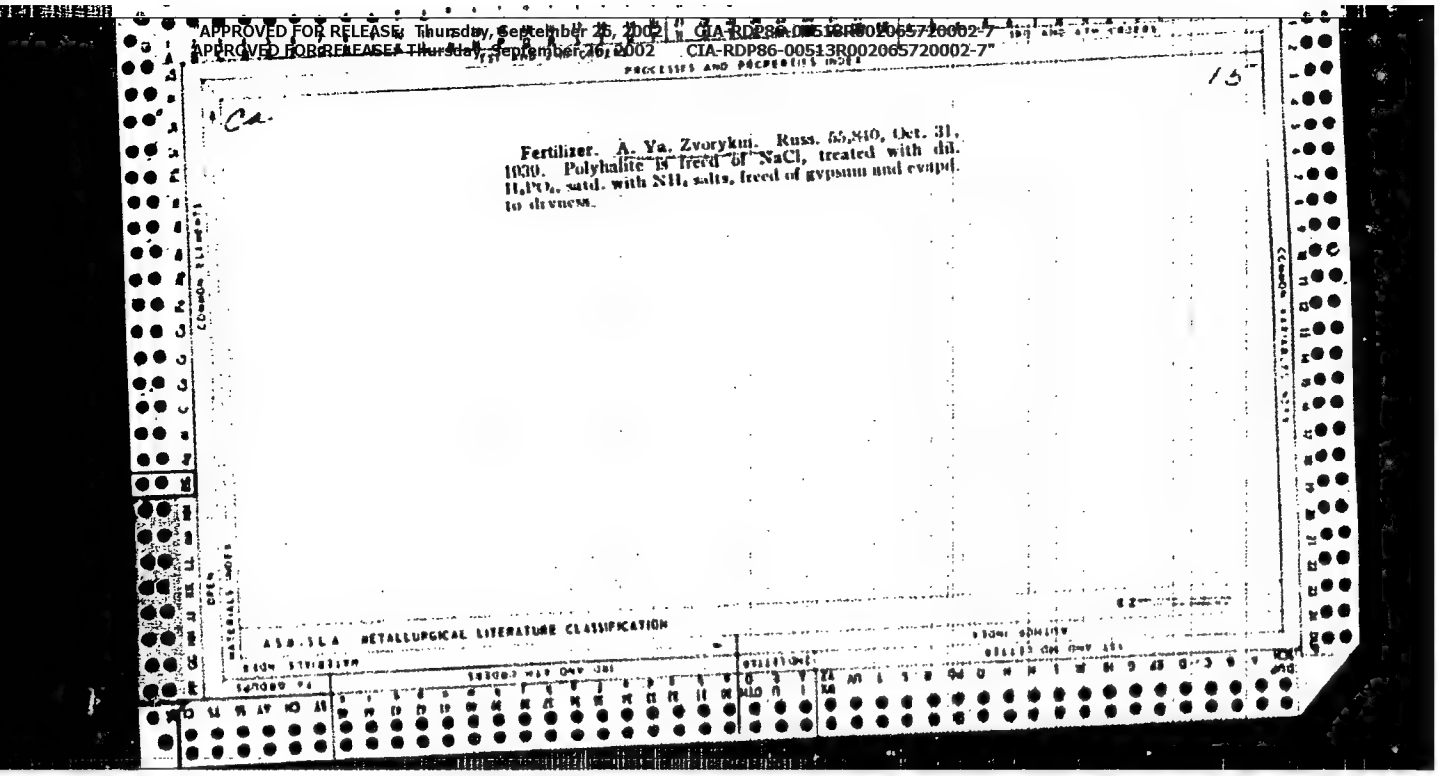

Ca

Fertilizer. A. Ya. Zvorykin. Russ. 55,840, Oct. 31, 1939. Polyhalite is freed of NaCl, treated with dil. H_3PO_4, satd. with NH_3 salts, freed of gypsum and evapd. to dryness.

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CA

28

The heating curves of carbohydrates. A. Ya. Zvonykin and A. L. Sokolovskii. *J. Applied Chem. (U. S. S. R.)* 12, 1430-2(1939).—A preliminary report concerning the heating curves of sucrose, citrose, levulose, caramel, a mixt. of invert sugar and sugar and sugar-molasses must is given. Each curve had 3 transformation periods as shown by the endothermic effects. The identification of the transformation products will be detd. in the near future.

A. A. Podgorny

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15

Concentrated fertilizers containing phosphorus, potassium, ammonia and magnesium from polyhalite. A. Ya. Zvorykin and V. Ya. Ketkovich. *Compt. rend. acad. sci. U. R. S. S.* 27, 464-5(1940)(in English).—Utilization of polyhalite ($K_2SO_4.MgSO_4.2CaSO_4.2H_2O$) is a most urgent problem, where large deposits are indicated in several districts of Western Kazakhstan and the Middle Volga. K. and Z. state that the industrial conversion of the American polyhalite into K_2SO_4 as suggested in the literature and in patents is extremely complicated and does not appear remunerative inasmuch as its ultimate product is a very weak K_2SO_4 soln. whose evapn. is hardly profitable. In view of the fact that many crops cultivated in their country, as tobacco, citrus plants or flax are in need of Cl-free fertilizers contg. K, NH_3, Mg and phosphate, the authors treated polyhalite with conc. H_3PO_4 and satd. the liquid mass with NH_3; products of the following percentage compn. were obtained: Water-sol. fraction NH_3 17.20, P_2O_5 26.80, CaO 0.48, MgO 0.37, K_2O 4.53, sulfate 15.93; salt compn. $(NH_4)_2HPO_4$ 43.68, K_2HPO_4 8.37, $CaSO_4$ 1.17, $MgSO_4$ 1.13, $(NH_4)_2SO_4$ 10.56 and water-insol. residue 24.97. After soln. in 20% HCl: NH_3 18.05, P_2O_5 35.79, CaO 0.01, MgO 1.27, K_2O 5.15, sulfate 19.94, residue insol. in HCl 0.50; salt compn. $(NH_4)_2HPO_4$ 50.37, K_2HPO_4 9.53, $CaSO_4$ 14.64, $(NH_4)_2SO_4$ 10.45, $MgSO_4$ 3.79, residue insol. in HCl 0.50. In order to lower the content of water-insol. fraction, the polyhalite was mixed with dild. conc. H_3PO_4 and the liquid fraction sepd. from the insol. fraction by filtration. The filtrate was then satd. with NH_3 and both liquid and insol. salt fractions were analyzed. Water-sol. fraction percentage compn. was: NH_3 13.82, P_2O_5 49.80, K_2O 3.10, sulfate 6.48, water-insol. residue 9.22; salt compn., KH_2PO_4 8.08, $NH_4H_2PO_4$ 73.27, $(NH_4)_2SO_4$ 8.01 and water-insol. residue 9.22. After soln. in 20% HCl: NH_3 14.41, P_2O_5 54.25, MgO 0.44, K_2O 4.08, sulfate 0.71, residue insol. in HCl 0.09; salt compn. KH_2PO_4 11.79, $NH_4H_2PO_4$ 77.93, $(NH_4)_2SO_4$ 0.23, $MgSO_4$ 1.31 and residue insol. in HCl 0.09. The above data favor the manuf. of concd. fertilizers from polyhalite according to the method patented by Z. (Russ. pat. 55,840, C. A. 34, 5008⁹). Further work on the phys. and chem. properties of the product with reference to its utilization in agriculture and to its equil. diagram is in progress.

W. A. Cook

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CA

18

The relation between the degree of conversion of sulfur in the oxidation of sulfides and the changes in the solid and the gaseous phase. A. Ya. Zvorykin. *Akad. Nauk S.S.S.R., Referaty, Otdel. Khim. Nauk* 1945, 31.—The degree of conversion Z (%) of S into SO_2 on roasting can be detd. indirectly from the amt. b of SO_2 (in g.) in the gas and the increase of wt. d of the sample, by $Z = 13750\,(d + 2.25\,b)/am$ where a = initial wt., m = % sulfide in the sample. N. Thon

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Application of physicochemical analysis to the study of complex catalysts. The activity of the oxides of cobalt, nickel, and copper in the decomposition of hydrogen peroxide. A. Yu. Zavorykin and F. M. Perel'man. *J. Phys. Chem.* (U.S.S.R.) 20, 1095–1101 (1946) (in Russian).—The reaction consts. of the decompn. of H_2O_2 in the presence of equimol. amts. of CuO, a Co oxide, and Ni_2O_3 were in the ratio 0.013:1.21:0.020. Among the many binary and ternary mixts. of these oxides only those contg. about 80 at.% of Co and 20% of Ni or about 80% of Co, 15% of Ni, and 5% of Cu were considerably more active than the Co oxide; in their presence the reaction const. reached 1.40. J. J. Bikerman

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ZVORYKIN, A. YA.

"Concerning the Reactions of Oxides and Salts in Solid State." Sub 29 Sep 47, Moscow Inst of Fine Chemical Technology imeni M. V. Lomonosov

Dissertations presented for degrees in science and engineering in Moscow in 1947

SO: Sum No. 457, 18 Apr 55

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the purpose. Metal chlorides were
their gels. The suspension was thoroughly shaken, the ppt. allowed
to settle, and its vol. observed. This procedure was re-
peated over a number of days. As the ppt. aged, its vol.
contracted. Immediately after shaking, the contraction
was rapid and after appreax. 13-15 min. it leveled off.
The results of the observations were plotted, with time in
min. on the abscissa and vol. in cc. on the ordinate. A
tangent drawn from the point where the curve leveled
off (13-15 min.) and extended to the ordinate gave the
vol. assumed to be the max. that would be reached by the
ppt. immediately after shaking if it were uniformly dis-
persed and if it were not acted upon by gravity. This
vol. decreased as the hydroxide aged and it was different
for different hydroxides. The ratio of the vol. assumed by

a hydroxide when it settles freely in a water-filled cylinder
and the max. vol. of the same hydroxide is referred to as the
"active vol." Each of the hydroxides had its own active
vol., which diminished with age. Plotting log t (time) as
abscissa and log v (vol.) as ordinate gave a series of straight
lines representing the change of the active vol. with time.
From these curves it can be seen that the stability of hy-
droxides decreases in the order Mn, Fe, Ni, Co, and Cu.
The results were tested on mixed Co and Cu hydroxide
catalyst. The activity of these catalysts was parallel to
changes in their structure.

M. Booth

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CA

Solid solutions of potassium and ammonium phosphates. N. S. Kurnakov, A. Ya. Zvyrykin, and V. Ya. Ketkovich. *Izvest. Sektora Fiz.-Khim. Anal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* 14, No. 3, 108-98 (1948).—The purpose was to ascertain the optimum conditions for producing $mKH_2PO_4 \cdot nNH_4H_2PO_4$ to be used as a concd. fertilizer free of Cl. First was investigated the quaternary aq. system $NH_4H_2PO_4 + KCl \rightleftharpoons KH_2PO_4 + NH_4Cl$ at 25°. To this end were studied $KH_2PO_4 + NH_4H_2PO_4 + H_2O$, $KH_2PO_4 + KCl + H_2O$, $KCl + NH_4Cl + H_2O$, and $NH_4Cl + NH_4H_2PO_4 + H_2O$. The results were plotted in the form of a space diagram projected on its quadrangular base $NH_4H_2PO_4$-KH_2PO_4-KCl-NH_4Cl. Next were detd. the solv. of KCl and NH_4Cl in satd. solns. of $(NH_4)_2PO_4$ at various concns. of NH_3 at 25 and 0°. The results are tabulated. The phase diagrams indicated a simple and effective process for the production of $mKH_2PO_4 \cdot nNH_4H_2PO_4$ consisting of passing NH_3 into a soln. of tech. H_3PO_4 and KCl. The solid phase was sepd. in a centrifuge. In this step 80-90% of the used P_2O_5 is used up. The mother liquor contg. the balance of H_3PO_4 is satd. with NH_3, thereby pptg. $(NH_4)_2HPO_4$. This gives off NH_3, leaving $(NH_4)_2HPO_4$. In these 2 steps 95-99% of the P_2O_5 is utilized. The 2nd mother liquor can be evapd. to yield $KCl.NH_4Cl$, or, if desired, glaserite.

M. Hosch

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ZVORYKIN, A. Ya

32537. ZVORYKIN, A. Ya i TIKCHINA, N. I. Spekanie soley i okislov. Zhurnal prikl. khimii, 1949, No 10, s. 1063-67

SO: Letopis' Zhurnal'nykh Statey, Vol. 44, Moskva, 1949

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Irregular multidimensional figures in physicochemical analysis. F. M. Perel'man and A. Ya. Zyorykin (N. S. Kurnakov Inst. of Gen. and Inorg. Chem., Acad. Sci. U.S.S.R.). *Izvest. Sektora Fiz.-Khim. Anal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* 19, 144-50 (1949).—The use of multidimensional diagrams for presentation of the compn. and properties of complex systems is discussed. The geometry of such figures is analyzed. M. Hosch

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Sintering of salts and oxides. A. Va Zaurykin and N. I. Timokhina. *J. Applied Chem.* (U.S.S.R.), 22 [10] 1083-87 (1949).—Powders of CaF_2 were fired in a porcelain crucible at 400°, 500°, 600°, and 700°C., while powders of SiO_2, $CaCO_3$, and Fe_2O_3 were fired at temperatures from about 900° to 1100°. The compressive strength of the sintered shapes was determined under a constantly increasing load. Curves of strength vs. temperature indicate that strength of sintering is a characteristic of the solid material and reflects the changes occurring during the various temperature intervals. Experimental results support the following mechanism of sintering: Sintering is above all a diffusion of particles in the solid material; the mobility of particles and diffusion increase with rising temperature. The individual particles make contact in some places only, so that at first diffusion takes place gradually at these points of contact. In determining the strength of sintering, destruction takes place chiefly at these points of diffusion because here the particles are bound to one another less strongly than in the original crystalline material. As a result of the crushing of the shape, the graining of the material changes and, in addition to the original grains, larger and smaller grains are also obtained. R.Z.K.

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CA

Sintering of carbonates. A. Ya. Zvorykin. *Zhur. Prikład. Khim.* 24, 1131–8(1951).—Carbonates of Li, Na, Be, Mg, Ca, Sr, Cd, and Ba were subjected to temps. between 100 and 1000°. As was proved for chlorides (*C.A.* 44, 802*f*) the change of mech. strength on sintering depends on the energy of crystal lattices. For energy computation the formula by Kapustinsky was used. $U = 287.2\,[\Sigma nZ_1Z_2/(r_1 + r_2)]\,[1 - (0.345/(r_1 + r_2))]$, where $r_1 + r_2$ = sum of ionic radii, Σn = no. of ions, and Z_1 and Z_2 = valencies of ions.

S. Sirelkoff

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ZVORYKIN, A.Ya.; PEREL'MAN, F.M.

Solubility isotherm 25° of the system $(NH_4)_2MoO_4$—$(NH_4)_2SO_4$—H_2O. Khim.redk.elem. no.1:52-57 '54. (MLRA 8:3)

1. Institut obshchey i neorganicheskoy khimii im.N.S.Kurnakova AN SSSR.
(Solubility) (Ammonium salts)

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ZVORYKIN, A.Ya., kandidat khimicheskikh nauk.

New concentrated non-chlorinated fertilizer. Vest.AN SSSR 24 no.3:64-66 Mr '54. (MLRA 7:3)

(Fertilizers and manures)

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ZVORYKIN

ZELIKMAN, A.N.; SAMSONOV, G.V.; KREYN, O.Ye.; STEPANOV, I.S., inzhener, retsenzent; TANAYAYEV, I.V., retsenzent; POGODIN, S.A., professor, doktor, zasluzhennyy deyatel' nauki i tekhniki, retsenzent; RODE, Ye.Ye., professor, doktor, retsenzent; ABRIKOSOV, N.Kh, doktor khimicheskikh nauk, retsenzent; SHAMRAY, F.I., doktor khimicheskikh nauk, retsenzent; MOROZOV, I.S., kandidat khimicheskikh nauk, retsenzent; BOOM, Ye.A., kandidat khimicheskikh nauk, retsenzent; NIKOLAYEV, N.S., kandidat khimicheskikh nauk, retsenzent; ZVORYKIN, A.Ya, kandidat khimicheskikh nauk, retsenzent; BASHILOVA, N.I., kandidat khimicheskikh nauk, retsenzent; VYSOTSKAYA, V.N., redaktor; KAMAYEVA, O.M., redaktor; ATTOPOVICH, M.K., tekhnicheskiy redaktor

[Metallurgy of rare metals] Metallurgiia redkikh metallov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1954. 414 p. (MLRA 7:9)

1. Chlen-korrespondent Akademii nauk SSSR (for Tananayev)
(Metals, Rare--Metallurgy)

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The solubility isotherm in the system of paratungstate and ammonium sulfate at 25° [illegible] Zhurnal [illegible] Chem. [illegible] Redkoh Elementen [illegible] Nauk [illegible] Nauk [illegible] 1955, No. 2, 66-7. The solubility isotherm at 25° of $(NH_4)_2SO_4$-$(NH_4)_2W_2O_7$-H_2O was detd., and the results are shown graphically. In aq. neutral [illegible] the NH_4 paratungstate [illegible]

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PERELMAN, Yakov Isidorovich. ZHORYAN, Aleksandr Nikolayevich; NIKOLAYEV, N.S., doktor khimicheskikh nauk, nauchnyy redaktor; GOLUBKOVA, V.A., redaktor; YUSFINA, N.L., tekhnicheskiy redaktor

[How chemistry originated and with what it is concerned] Kak vozniklа khimiia i chem ona zanimaetsia. Moskva, Goskul'tprosvetizdat, 1956. 14 p. and 5 l. (MLRA 10:2)
(Chemistry--History)

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Physicochemical principles in the production of a new form of chlorine-free concentrated fertilizers. Zhur.neorg.khim. 1 no. 7:1523-1532 Jl '56. (MLRA 9:11)

(Phosphates)

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5(2) SOV/2252

Akademiya nauk SSSR. Institut obshchey i neorganicheskoy khimii

Redkiye metally (Rare Metals) Moscow, Izd-vo AN SSSR, 1957. 155 p. 4,500 copies printed. Errata slip inserted.

Ed. of Publishing House: Th. S. Shlyamina; Tech. Ed.: A. A. Pavlovskiy; Editorial Board: I. V. Tananayev (Resp. Ed.), S. A. Popova, Yu. Ya. Kuz, V. G. Stoker, and O. P. Bogush (Secretary).

PURPOSE: The book is intended for scientists and engineers concerned with the study and utilization of rare elements.

COVERAGE: The book is a collection of papers on investigations in the chemistry of rare elements conducted at the Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov). No personalities are mentioned. There are 145 references: 99 Soviet, 23 English, 11 German, 10 French, 1 Italian, and 1 Japanese.

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10-7-58

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AUTHORS: Perel'man, F. M., Zvorykin, A. Ya., Yakubovskaya, T. N.

TITLE: Some Difficultly Soluble Salts of the Heteropolyacid of Germanium and Silicon (Nekotoryye malorastvorimyye soli geteropolikislot germaniya i kremniya)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr.6, pp. 1374 - 1380 (USSR)

ABSTRACT: In the present paper the difficultly soluble ammonia, rubidium and cesium salts of the germanium-and silicon-molybdenum-heteropolyacid were investigated. The synthesis of germanium-molybdenum and silicon-molybdenum-heteropolyacid as ammonia, rubidium and cesium salts was described. The following compounds were produced:

$1,75(NH_4)_2O.SiO_2.12MoO_3.5H_2O$ $1,7Rb_2O.SiO_2.12,2MoO_3.8,1H_2O$

$1,85(NH_4)_2O.GeO_2.12MoO_3.4,65H_2O$ $2Rb_2O.GeO_2.12MoO_3.9H_2O$

$1,54Cs_2O.SiO_2.11,5MoO_3.6,8H_2O$

$1,82Cs_2O.GeO_2.11,5MoO_3.6H_2O$

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Some Difficultly Soluble Salts of the Heteropolyacid of Germanium and Silicon

The x-ray analyses show that all these salts are isomorphous. The solubility of the ammonia, rubidium and cesium salts of the silicon-molybdenum, and germanium-molybdenum-heteropolyacids at 25°C is investigated. The solubility of ammonia salt of Si-Mo-heteropolyacid is 7,55% of rubidium salt of Si-Mo-heteropolyacid is 0,475%, of cesium salt of Si-Mo-heteropolyacid 0,123%, of ammonia-Ge-Mo-acid 7,78%, of Rb-Ge-Mo-acid 0,90% and Cs-Ge-Mo-acid 0,075%. The solubility of all six salts was also determined in aqueous sulfuric acid solutions of ammonia and rubidium salts at a concentration of 1,5 - 40% sulfuric acid and of cesium salt at a concentration of 1,5-25% sulfuric acid. Also the solubility of cesium salts of the above mentioned heteropolyacids in nitric solutions at concentrations of 2% and 5,3% HNO_3 as well as the solubility of oxalic acid at concentrations of 2-9% HNO_3 was determined. Sulfuric acid considerably reduces the solubility of the ammonia, rubidium and cesium salts of the silicon-molybdenum-, and germanium-molybdenum-

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Some Difficultly Soluble Salts of the Heteropolyacid of Germanium and Silicon

-heteropolyacids. On this occasion the solubility of the ammonia salts of the above mentioned heteropolyacids is ten times greater than the solubility of the corresponding rubidium salts. The cesium salt of the Ge-Mo-heteropolyacid has a solubility ten times smaller than that of the corresponding Rb-Ge-Mo-acid. Cesium salt of the Si-Mo-acid has a solubility hundred times smaller than the corresponding Rb-Mo-acid. It was found that the salts of the Gr-Mo-heteropolyacids are more easely soluble than the corresponding salts of the Si-Mo-acids almost in all cases especially in concentrated acids. Cesium salt of the Si-Mo-acid shows the smallest solubility. Its solubility in aqueous sulfuric solution is 0,004-0,005%. The solubility of cesium salt of the Ge-Mo-acid in the same sulfuric solution is 0,04%. There are 5 figures, 8 tables, and 19 references, 8 of which are Soviet.

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78-3-6-14/30

Some Difficultly Soluble Salts of the Heteropolyacid of Germanium and Silicon

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova, AN SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, AN USSR)

SUBMITTED: May 21, 1957

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1. Germanium compounds 2. Silicon compounds 3. Heteropolyacids --Salts 4. Salts--Solubility 5. Chemical compounds--Production

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76-32-3-24/43

AUTHORS: Zvorykin, A. Ya., Perel'man, F. M., Shakhova, S. K.

TITLE: On the Catalytic Activity of Rare Elements in the Reaction of the Decomposition of Hydrogen Peroxide I (O kataliticheskoy aktivnosti redkikh elementov v reaktsii razlozheniya perekisi vodoroda. I.)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol 32, Nr 3, pp 654 - 658 (USSR)

ABSTRACT: Mixed catalysts of salts of rare elements are investigated in the present paper, the attention being focused on the influence of the ratio of catalyst components, as well as that of the temperature and the pH, upon the catalytic activity. In order to bring about a simultaneous mixture of both catalyst components with the hydrogen peroxide solution, a glass container was constructed in which two little dishes with the catalysts on a glass holder are located, from where they fall into the liquid upon mechanical agitation of the system. The velocity of decomposition of hydrogen peroxide was measured at 25°C and a pH of 8.0. The experiments performed with niobium oxalate

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On the Catalytic Activity of Rare Elements in the Reaction of the Decomposition of Hydrogen Peroxide

showed a negative catalytic action of niobium upon other catalysts, especially cobalt chloride. Sodium molybdate in combination with copper chloride(Na_2MoO_4-$CuCl_2$) showed an increase of the catalytic action, which exceeded that of the individual components several times. Investigations with zirconium sulfate showed that in the system zirconium-sulfate/manganese-dioxide, the curve of the catalytic activity contains a maximum from which a complicated change of the catalytic activity may be deduced. A table of the changes of velocity and of the values of the reactior constant of the last-mentioned system is given from which it may be seen that the activity of zirconium sulfate at the beginning of the examination is higher, that it then drops to a lower value and remains constant. There are 4 figures, 1 table, and 9 references, 6 of which are Soviet.

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76-32-3-24/43

On the Catalytic Activity of Rare Elements in the Reaction of the Decomposition of Hydrogen Peroxide

ASSOCIATION: Akademiya nauk SSSR, Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (AS USSR, Institute of General and Inorganic Chemistry imeni N. S. Kurnakov)

SUBMITTED: November 30, 1956

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5(4)

SOV/76-33-2-34/45

AUTHORS: Perel'man, F. M., Zvorykin, A. Ya, Shakhova, S. K.

TITLE: The Catalytic Activity of the Rare Elements in the Decomposition of Hydrogen Peroxide II (O kataliticheskoy aktivnosti redkikh elementov v reaktsii razlozheniya perekisi vodoroda II)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2, pp 452 - 456 (USSR)

ABSTRACT: The method of the work reported here was the same as was used in the previous paper, i.e., a simultaneous addition of both catalysts at the beginning of the reaction. Investigated were sodium gallate (I), thorium nitrate (II), titanium sulfate (III), and germanium chloride (IV), alone and together with the chlorides of cobalt, copper, and iron also of MnO_2 at 25°C and pH = 8.0. It was observed that a combination of (I) with $CuCl_2$ increased the catalytic activity and that this was greater than the additive values of the single components. All the catalysts of this system are unstable and lose their activity quickly (Fig 1). The system (II) - $CuCl_2$

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and (II) - MnO_2 (Figs 2,3) show also in increased catalytic effect upon the decomposition of H_2O_2. With the first system the activity is doubled and with the second system the activity is 4.6 times the additive value of the components using a content of 30% (II). The system (II) - MnO_2 is more stable in its catalytic activity than the above mentioned combinations of (I). An increase of 5 to 2.5 times in activity above the additive values of the components was observed for the (III)-$CuCl_2$ and (III) - $CoCl_2$ systems, and the maximum activity was found to occur with a content of 50% (III) (Figs 4,5). The (III)-$CoCl_2$ systems are high in activity but very unstable, while (III)-$CuCl_2$ are stabler combinations. In the (IV)-$CuCl_2$ system a smaller increase in activity was observed (Fig 6). The experimental results show that the maximum activity occurs with the compositions of a 1:1 molar ratio of the components. There are 6 figures and 3 references, 2 of which are Soviet.

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The Catalytic Activity of the Rare Elements in the Decomposition of Hydrogen Peroxide II SOV/76-33-2-34/45

ASSOCIATION: Akademiya nauk SSSR, Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (Academy of Sciences, USSR, Institute for General and Inorganic Chemistry imeni N. S. Kurnakov)

SUBMITTED: July 30, 1957

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AUTHORS: Perel'man, F. M., Zvorykin, A. Ya., Demina, G. A.

S/078/60/005/04/034/040
B004/B016

TITLE: Investigation of the Solubility in the System $Y(NO_3)_3 - NH_4NO_3 - H_2O$ at 25 and 50°

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol 5, Nr 4, pp 960 - 963 (USSR)

ABSTRACT: The authors refer to the method of the fractional separation of lanthanides used in practice and quote a paper by G. G. Urazov and Z. N. Shevtsova (Ref 4). The purpose of the present paper is to clarify the conditions for the occurrence of the yttrium-ammonium-nitrate double salt. The results obtained according to the solubility method are presented in tables 1, 2 and in Schreinemakers' diagrams in figures 1,2. At 50° the solubility curve shows three branches corresponding to the crystallization of the three salts $Y(NO_3)_3 \cdot 4H_2O$, $Y(NO_3)_3 \cdot 2NH_4NO_3$, and NH_4NO_3. The double salt crystallizes at this temperature in the anhydrous state in the range of the concentrations of NH_4NO_3 from 18 to 44%, and of $Y(NO_3)_3$ from 66 - 48%. Its solubility in water amounts to 88% at 50°. At 25° the double salt could not be

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Investigation of the Solubility in the System $Y(NO_3)_3 - NH_4NO_3 - H_2O$ at 25 and 50°

obtained, although the diagram shows the corresponding branch. The authors assume that the crystallization of the double salt at this temperature is rendered difficult owing to the high viscosity of the solution. $Y(NO_3)_3$ crystallizes in the presence of NH_4NO_3 both at 25° and at 50° with four molecules of crystal water. There are 2 figures, 2 tables, and 6 references, 2 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

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86489

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B023/B066

AUTHORS: Zvorykin, A. Ya., Perel'man, F. M., Babiyevskaya, I. Z., Fedotova, T. N.

TITLE: Calcium and Iron Germanates

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 8, pp. 1717-1724

TEXT: The authors investigated systems of sodium germanate and calcium nitrate or iron nitrate in aqueous solutions with different ratios of the components. The formation of calcium metagermanate, $CaO.GeO_2.nH_2O$, and three iron germanates, $Fe_2O_3.GeO_2.nH_2O$, $Fe_2O_3.2GeO_2.nH_2O$, and $Fe_2O_3.3GeO_2.nH_2O$, was detected by Schreinemakers' method. Thermograms and X-ray diffraction patterns of the compounds mentioned above disclosed characteristic peculiarities and confirmed the chemical homogeneity of the resulting compounds. It was further found that the germanate $Fe_2O_3.GeO_2.nH_2O$ may be obtained with 15 and 2.5 molecules of hydration water, and that the

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germanate $Fe_2O_3 \cdot 2GeO_2 \cdot nH_2O$ still contains two H_2O molecules after drying at 120°C. All iron germanates were subjected to X-ray phase analysis at the laboratory of V. G. Kuznetsov. Table 1 shows the composition of the liquid phases and of the "residues" in the system Na_2GeO_3-$Ca(NO_3)_2$-H_2O, and Table 2 dto. in the system Na_2GeO_3-$Fe(NO_3)_3$-H_2O. Fig. 1 illustrates the composition of the solid phases in the system Na_2GeO_3-$Ca(NO_3)_2$-H_2O, and Fig. 2 dto. in the system Na_2GeO_3- $Fe(NO_3)_3$-H_2O. V. F. Zhuravlev is mentioned. There are 7 figures, 2 tables, and 10 references: 4 Soviet, 4 German, and 2 US.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences USSR)

SUBMITTED: March 10, 1959

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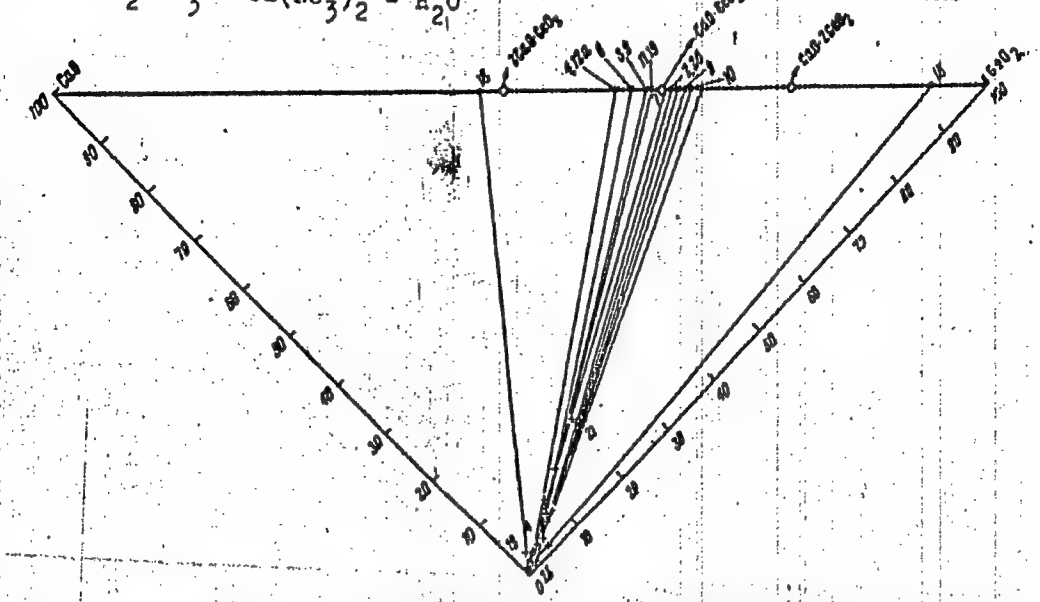
BC23/B066

Legend to Fig. 1: Fig. 1: Composition of the solid phases in the system Na_2GeO_3 - $Ca(NO_3)_2$ - H_2O.



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ZVORYKIN, A.Ya.; PEREL'MAN, F.M.

Oxidation of cobalt sulfide in the presence of sodium chloride. Zhur.prikl.khim. 33 no.4:765-768 Ap '60. (MIRA 13:9)
(Cobalt sulfide) (Oxidation)

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ZVORYKIN, A. Ya.

Sintering of some sulfates. Zhur.prikl.khim. 33 no.5:1019-1024 My '60. (MIRA13:7)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova AN SSSR.

(Sulfates)

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34866
S/078/62/007/003/012/019
B110/B138

5.2600

AUTHORS: Perel'man, F. M., Zvorykin, A. Ya., Demina, G. A.

TITLE: The solubility isotherm (25°C) of the system $Pr(NO_3)_3$-$RbNO_3$-HNO_3-H_2O

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 3, 1962, 641 - 644

TEXT: The formation of double nitrates of praseodymium and rubidium in the presence of HNO_3 was examined in a thermostat (25 ± 0.1°C). Liquid phase samples and residues were taken after the establishment of equilibrium (after 2 - 3 days). Chemically pure Pr_6O_{11} and Rb_2CO_3 were converted into $Pr(NO_3)_3 \cdot 6H_2O$ (Pr_6O_{11}, 40.96%) and into rubidium nitrate (Rb_2O, 62.66%) by means of HNO_3. Pr was precipitated by means of NH_4OH, annealed, and weighed as Pr_6O_{11}. Rb was weighed as perchlorate. Five solid phases were formed: (1) $Pr(NO_3)_3$; (2) $5RbNO_3 \cdot 4Pr(NO_3)_3$; (3) $7RbNO_3 \cdot 5Pr(NO_3)_3$; (4) $5RbNO_3 \cdot 2Pr(NO_3)_3$; (5) $RbNO_3$. The compositions next

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The solubility isotherm...

to $RbNO_3$ were examined at 30 - 36%, and those adjoining $Pr(NO_3)_3$ at 26 - 30% of HNO_3. The incongruent double salt $2\,Pr(NO_3)_3 \cdot 5RbNO_3$ only exists with $Pr(NO_3)_3$ concentration less than 10.09%. If the $Pr(NO_3)_3$ concentration is increased, $5\,Pr(NO_3)_3 \cdot 7RbNO_3$ crystallizes. Anhydrous $Pr(NO_3)_3$ crystallizes first and next, in the presence of not more than 3 - 4% of $RbNO_3$, the double salt $5RbNO_3 \cdot 4Pr(NO_3)_3$. However, only three salts could be synthesized: (1) anhydrous $Pr(NO_3)_3$ under the conditions of point 2 (Fig. 1); (2) the anhydrous, bright green, coarse-crystalline double salt $4Pr(NO_3)_3 \cdot 5Rb(NO_3)$ under the conditions of point 6; (3) the anhydrous, light green, fine crystalline double salt $2Pr(NO_3)_3 \cdot 5RbNO_3$ under the conditions of point 18. All three salts decompose at 85 - 90°C with the liberation of dark-brown vapors of oxides of nitrogen.
D. I. Mendeleyev and N. S. Kurnakov are mentioned. There are 2 figures, 1 table, and 4 references: 3 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: R. C. Vickery,

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PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; GAMZA, L.B.

Degree of polymerization of potassium metaphosphates at various temperatures. Izv. AN SSSR. Neorg. mat. 1 no.6:900-902 Je '65. (MIRA 18:8)

1. Institut obshchey i neorganicheskiy khimii imeni N.S. Kurnakova AN SSSR.

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; GAMZA, L.B.

Degree of polymerization of sodium metaphosphate at various temperatures. Izv. AN SSSR. Neorg. mat. 1 no.5:725-729 My '65. (MIRA 18:10)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

PEREL'MAN, F.M.; ZVORYKIN, A.Za.; DEMINA, G.A.

Solubility isotherm (25°) in the system Nd $(NO_3)_3$ - RbNO3 - H_2O.
Zhur. neorg. khim. 8 no.7:1753-1755 Jl '63.
(MIRA 16:7)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova AN SSSR.
(Neodymium nitrate) (Rubidium nitrate)
(Solubility)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.Ya.

Some inorganic polymers based on rubidium phosphates. Zhur.neorg.-khim. 8 no.2:274-277 F '63. (MIRA 16:5)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Rubidium phosphates) (Polymerization)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.Ya.; RATNIKOVA, V.D.

Solubility isotherm (25°) in the system CsH_2PO_4 — $NH_4H_2PO_4$ — H_2O.
Zhur.neorg.khim. 8 no.4:1018-1019 Ap '63. (MIRA 16:3)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Alkali metal phosphates) (Solubility)

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L 12[illegible] EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG

ACCESSION NR: AP3003485 S/0078/63/008/007/1753/1755

59
58

AUTHOR: [illegible], P. M.; Zvory*kin, A. Ya.; Demina, G. A.

[illegible] solubility isotherm 25°) in the system Nd(NO sub 3) sub 3 - RbNO sub 3 - [illegible] sub 3 - H sub 2 [illegible]

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 7, 1963, 1753-1755

TOPIC TAGS: solubility, isotherm, HNO sub 3, rubidium nitrate, neodymium nitrate, praseodymium nitrate

ABSTRACT: The authors studied the quaternary system Nd(NO sub 3) sub 3 - RbNO sub 3 - [illegible] sub 3 - H sub 2 [illegible] at 25° in an interval of 25 - [illegible] sub 3 by the [illegible] method. It was found that two double salts of the composition 4Nd[illegible] [illegible] sub 3 times [illegible] NO sub 3 [illegible] properties [illegible] acid solutions [illegible]

Card 1/2 Inst of Gen and Inorganic Chemistry

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; DEMINA, G.A.

Solubility isotherm of the system $Pr(NO_3)_3 - RbNO_3 - H_2O$. Zhur. neorg.khim. 7 no.3:641-644 Mr '62. (MIRA 15:3)
(Praseodymium nitrate) (Rubidium nitrate)
(Systems (Chemistry))

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7

PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; TARASOV, V.V.; ZEMLYA, O.A.

Thio salts of molybdenum and tungsten. Zhur.neorg.khim. 6 no.9: 1999-2002 S '61. (MIRA 14:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova AN SSSR.
(Molybdates) (Tungstates) (Systems (Chemistry))

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.Ya., VEYKINA, L.S.

Solubility isotherm of the system $RbH_2PO_4 - H_2O$ at 25 . Zhur.neorg. khim. 6 no.11:2572-2575 '61. (MIRA 14:10)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Rubidium phosphate) (Ammonium phosphate) (Solubility)

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ZVORYKIN, A.Ya.; PEREL'MAN, F.M.; TARASOV, V.V.

Molybdenum and tungsten sulfides and oxysulfides. Zhur.neorg.khim. 6 no.9:1994-1998 S '61. (MIRA 14:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova Akademii nauk SSSR.
(Molybdenum sulfide) (Oxysulfides)

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.A.

Mining Engineering

Outline of the history of Soviet mining engineering. Reviewed by S. Ya. Rackovskiy, S.M. Yasiukevich, G.N. Popov. Gor. zhur. No. 2, 1952

Monthly List of Russian Accessions, Library of Congress, April, 1952 Unclassified

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A. A.

Reconstruction of the coal mining industry. Moskva, Gos. nauch.-tekhn. gorno-geologo-neftianoe izd-vo, 1934. 236 p. (50-45462)

TN808.R9Z9

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002[illegible]
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002[illegible]

Oct 1947

[illegible]R/Engineering
Industrial Statistics

[illegible]chnical Re-equipping of the USSR People's Economy [illegible] Thirty Years," Prof A. A. Zvorykin, L. V. Zub-[illegible], 13 pp

[illegible]auka i Zhizn'" No 10

[illegible] First Five-Year Plan Soviet industries multiplied [illegible] eight times (US in the same period expanded [illegible] 50%). General account of the rapid strides [illegible] in Soviet industry. No exact production fig-[illegible], but gives comparisons in terms of percentages. [illegible] of photographs show industrial might of USSR. Views show Volkhovsk Hydroelectric Plant imeni V. I.

58T32

Oct 1947

USSR/Engineering (Contd)

[illegible]nin, Nevinnomysskiy Canal with a view of causeway. Several views of steel plants, among them a shore-ward view of AzovStal' Metallurgical Works; several photographs of factory equipment, e.g., a super die press at the UralMashZavod.

58T32

ZVORYKIN, A. A.

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7

ZVORYKIN, A. A.

Zvorykin, A. A. and Kirzhner, D. M. "The development of the mining industry of the USSR and the productivity of its labor", in the collection entitled: Voprosy gornogo dela, Moscow, 1948, p. 369-85.

SO: U-2888, 12 Feb. 53, (Letopis' Zhurnal 'nykh Statey, No. 2, 1949).

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A. A., Prof

Nov 48

USSR/Mining Methods
Efficiency, Industrial

"Methods for Increasing the Productivity of Labor at USSR Coal Industries," Prof A. A. Zvorykin, Dr, 3½ pp

"Ugol'" No 11 (272)

Discusses causes of stoppages and delays at coal face. Explains advantages of mechanization. Quotes figures illustrating percentage of improvement.

14/49T100

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A. A.

Soviet superiority in the most important technical discoveries and inventions. Moskva. Pravda. 1949. 31 p.

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.

20732. Zvorykin, A. K istorii kizelovskogo kamennougol'nogo basseyna. Voprosy ekonomiki, 1949, No. 5, s. 36-47

SO: LETOPIS ZHURNAL STATEY - Vol. 28, Moskva, 1949

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A

Pervootkryvateli Kamennougol'nykh Basseynov SSSR. (First Discoverers of USSR's Coal Fields) ... Moskva
(IZD-VO "Pravda") 1950.
31 P.
At head of title: Vsesoyuznoye Obshchestvo Po Rasprostraneniyu Politicheskikh I Nauchnykh Znaniy.
Bibliographical footnotes.

A lecture on discoveries of coal deposits in Russia, listing dates and locations, as well as names of discoverers. Mentioned is also the beginning of a broad development of underground coal gasification in the Soviet Union.

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.A.; KIRZHNER, D.M.; KUNDIN, M.B.

[Economics, organization and planning in the U.S.S.R. coal industry] Ekonomika, organizatsiia i planorovanie ugol'noi promyshlennosti SSSR. Moskva, Ugletekhizdat, 1951. 687 p. (MLRA 6:8)
(Mining industry and finance) (Coal mines and mining)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, P. A.

The discovery of coal deposits in Russia; the beginning of their development. Research and documents. Moskva, Ugletekhizdat, 1952. 355 p. maps.
(54-22422)

TN808.R9Z89

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.A.; KIRZHNER, D.M.; KUNDIN, M.B.; DOROKHIN, N.G., otvetstvennyy redaktor; FEYTEL'MAN, N.G., redaktor; CHERENKOV, N.V., redaktor; ANDREYEV, G.G., tekhnicheskiy redaktor

[Economics of the coal industry of the U.S.S.R.] Ekonomika ugol'noi promyshlennosti SSSR. Izd. 2-e, perer. i dop. Moskva, Ugletekhizdat, 1954. 427 p. [Microfilm] (MLRA 8:2)
(Coal mines and mining)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, Anatoliy Alekseyevich; KIRZHNER, David Mironovich; KUNDIN, Mikhail Borisovich; DOKOKHIN, N.O., otvetstvennyy redaktor; FEYTEL'MAN, N.G., redaktor izdatel'stva; KOROVENKOVA, Z.A., tekhnicheskiy redaktor; ALADOVA, Ye.I., tekhnicheskiy redaktor

[Production organization and planning in the Soviet coal industry] Organizatsiia i planirovanie proizvodstva v ugol'noi promyshlennosti SSSR. Izd. 2-oe, perer. i dop. Moskva, Ugletekhizdat, 1956. 483 p. (MLRA 9:12)
(Coal mines and mining)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

BERKOVICH, D.M.; ZVOKYKIN, A.A.

Some tendencies in the development of the technology of modern machine construction. Vop. ist.est. i tekh. no.1: 168-178 '56. (MLRA 9:10)

(Machinery industry)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.; KIRZHNER, D.

Some problems in the organization of wages in the coal industry. (MLRA 9:7)
Sots. trud no.2:67-75 F '56.
(Coal mines and mining) (Wages)

APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

BERKOVICH, D.M.; [redacted]

Trends in the technological development of the contemporary machine construction industry. Vop.ist.est. i tekh. no.2:207-216 '56.
(MLRA 10:1)

(Mechanical engineering) (Machinery--Constuction)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.A.

Periodicity in the history of natural sciences and technology. (MIRA 11:1)
Vop. ist. est. i tekh. no.4:153-162 '57.
(Technology--History) (Natural history) (Dialectical materialism)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

2V

119-11-4/7

AUTHORS Zvorykin, A.A., and Kirzhner, D.M.

TITLE "How to Determine the Economic Effectiveness of Automation".
(kak opredelyat' ekonomicheskuyu effektivnost' avtomatizatsii)

PERIODICAL Priborostroyeniye, 1957
Nr 11, pp. 13-17 (USSR)

ABSTRACT The most important index of the economic effectiveness of automation is the degree of the increase of work productivity. This effectiveness in the field of work productivity depends on the degree of wage-intensity in an enterprise being automized.
For the determination of the economic effectiveness in the index of work productivity we can carry out the following simple calculations: We call the number of workers in the enterprise
a) before the introduction of automation in the enterprise h_1
b) after the introduction of automation h_2
and we obtain in this case-with all other conditions remaining the same-the increase of work productivity to

CARD 1/4

$$\frac{h_1 - h_2}{h_2} \times 100\ \%$$

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"How to Determine the Economic Effectiveness of Automation".

and a decrease of wage intensity to

$$\frac{h_1 - h_2}{h_1} \times 100\ \%.$$

As second index for the determination of the effectiveness of automation serves the specific use of capital per production unit. When analysing the amount of this expenditure a certain regularity can be observed. As a rule the capital use per production unit decreases there where it is relatively low, or, where, in consequence of automation the scope of production increases essentially. The more complicated the enterprise is in technical respect and the higher the level of automation and the smaller the increase of production is, the more the capital use per production unit of the annual production will drop.
With the level of capital use also the socalled efficiency-agent of automation is connected, which shows us how much smaller the capital use is for the automation to secure an increase of the capacity of an aggregate or of machine, than the expenditures which

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"How to Determine the Economic Effectiveness of Automation".

are necessary in order to reach such an increase of the capacity of an aggregate or a machine without using automatic devices.
There is no reason to regard the coefficient of the efficiency of automation of universal importance. The most important index of the economic efficiency of automation in the USSR is the reduction of the production costs. Usually this effectiveness is characterized by a comparison of the percentage of the reduction of production costs in a non-automized enterprise. This is right, if the economic effectiveness of the same kind of processes and enterprises is considered. The percentage of the reduction of production costs with automation is different if the production costs are calculated with or without the costs of the raw-material. The distribution of the expenditures of the individual departments to the individual products is usually carried out proportionally to the wage of the basic productive workers. In cases of the automation of single processes or departments with a number of industrial branches the same principle was maintained

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"How to Determine the Economic Effectiveness of Automation".

which is used when comparing an automised with a non-automised production. This, however, is obviously uncorrect as the real expenditures of departments do not change according to the same relation with automation as do the wages.
When determining the share of the general costs of production per production unit in a non-automized or automized enterprise it is important to regard the demands for the equalisation of the quantity of production. Without this the effectiveness of an automized enterprise is artificially increased as in such a case the general costs of production (of the non-automised enterprise) refer to a smaller quantity of production than in an automized enterprise.

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ZVORYKIN, A.A., prof.; KIRZHNER, D.M.

Progressive engineers and technicians of the U.S.S.R. coal industry.
Ugol' 32 no.11:48-53 N '57. (MIRA 10:12)
(Coal miners) (Coal research)

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28(1) PHASE I BOOK EXPLOITATION SOV/1737

Zvorykin, Anatoliy Alekseyevich, Doctor of Economic Sciences, Professor

Avtomatizatsiya proizvodstva i yeye ekonomicheskaya effektivnost' (Automation of Production and Its Economic Efficiency) Moscow, Izd-vo "Znaniye," 1958. 62 p. (Series: Vsesoyuznoye obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy. Seriya 3, 1958, nos. 9/10) 66,000 copies printed.

Scientific Ed.: B.S. Sotskov, Doctor of Technical Sciences; Ed.: T.F. Falaleyeva; Tech Ed.: A.V. Trofimov.

PURPOSE: This pamphlet was prepared by the All-Union Society for the Dissemination of Political and Scientific Information and is intended for the general reader interested in automation.

Card 1/3

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COVERAGE: The author of this pamphlet briefly describes the various points of view of foreign specialists on automation. He presents his own views and concepts and reviews the automatization of production processes in the USSR and abroad. Emphasis is placed on the economic aspects of the automatization of production processes. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

Reason for Automatizing Production 6

Development of Automatization of Production Processes in the USSR and Capitalist Countries 14

Economic Efficiency of Automatization of Production Processes 30
Equalization of production volume when comparing automatized and nonautomatized production 34
Change in the productivity of labor under conditions of automatized production 40

Change in the extent of capital expenditures under conditions of automatized production 43
Change in the cost of product under conditions of automatized production 47
Comparison of automatized and nonautomatized production based on the length of time necessary for the recovery of capital outlays 51
Economic efficiency of automatization in relation to its level and applicability to individual branches of production 56

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NEMCHENKO, V.S.; BOCHAROV, M.D.; KRISTOSTUR'YAN, N.G.; CHERKASOV, V.I.; ANDREYANOV, V.V.; KAUFMAN, V.M.; PAKHMANOV, V.F.; ZVORYKIN, A.A., otv.red.; ANICHKOV, N.N., red.; BARDIN, I.P., red.; BLAGONRAVOV, A.A., red.; VVEDENSKIY, B.A., red.; GRIGOR'YEV, A.A., red.; KAPUSTINSKIY, A.F., red.; KOLMOGOROV, A.N., red.; MIKHAYLOV, A.A., red.; OPARIN, A.I., red.; PETROV, F.N., red.; STOLETOV, V.N., red.; STRAKHOV, N.M., red.; FIGUROVSKIY, N.A., red.; KOSTI, S.D., tekhn.red.

[Biographical dictionary of leaders in the natural sciences and technology] Biograficheskii slovar' deiatelei estestvoznaniia i tekhniki. Vol.1. A - L. Otvetstvennyi red. A.A.Zvorykin; Red. kollegiia: N.N.Anichkov i dr. Moskva, Gos.nauchn.izd-vo "Bol'shaia Sovetskaia Entsiklopediia." 1958. 548 p. (MIRA 12:4)

1. Redaktsiya istorii estestvoznaniya i tekhniki Bol'shoy Sovetskoy Entsiklopedii (for Nemchenko, Bocharov, Kristostur'yan, Cherkasov, Andreyanov, Kaufman, Pakhmanov).

(Scientists)

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APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7"

ZVORYKIN, A.A.

25-2-1/43

AUTHOR: Zvorykin, A.A., Doctor of Economical Sciences, Professor, and Shukhardin, S.V., Candidate of Technical Sciences

TITLE: Force of Scientific Foresight (Sila nauchnogo predvideniya). Karl Marx in Technial Progress (Karl Marks o progresse tekhniki)

PERIODICAL: Nauka i Zhizn', 1958, # 2, p 1-6 (USSR)

ABSTRACT: A brief review of advances made in the scientific and technical fields during the last few decades. There is one sketch and one diagram.

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ZVORYKIN, A.A., prof.; KIRZHNER, D.M., prof.

Basic problems of mining engineering theory and practice. Izv. vys.ucheb.zav.; gor.zhur. no.3:3-11 '58. (MIRA 12:8)
(Mining engineering)

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ZVORYKIN, A.A., prof.; KIRZHNER, D.M.; prof.

Methods of determining the economic efficiency of automatization in the coal industry. Nauch.dokl.vys.shkoly; gor.delo. no.4: 259-266 '58. (MIRA 12:1)

1. Predstavleno kafedroy ekonomiki, organizatsii i planirovaniya gornykh predpriyatiy Moskovskogo gornogo instituta imeni I.V. Stalina.

(Coal mines and mining--Costs)
(Automatic control)

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ZVORYKIN, Anatoliy Alekseyevich; ZHUK, I., red.; ULANOVA, L., tekhn.red.

[Creating material and technological basis of communism in the U.S.S.R.] Sozdanie material'no-tekhnicheskoi bazy kommunizma v SSSR. Moskva, Izd-vo sots.-ekon.lit-ry, 1959. 102 p. (MIRA 12:8)

(Technology)

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ZVORYKIN, A.A., otv.red.; NEMCHENKO, V.S., zaveduyushchiy red.; BOCHANOV, M.D., starshiy nauchnyy red.; KRISTOSTUR'YAN, N.G., starshiy nauchnyy red.; CHERKASOV, V.I., starshiy nauchnyy red.; ANDREYANOV, V.V., red.; GARKOVENKO, R.V., nauchnyy red.; KAUFMAN, V.M., mladshiy red.; PAKHMANOV, V.F., mladshiy red.; KOSTI, S.D., tekhn.red.

[Biographical dictionary of figures in the natural sciences and technology] Biograficheskii slovar' deiatelei estestvoznaniia i tekhniki. Otvetstvennyi red. A.A.Zvorykin. Red. kollegiia: N.M.Anichkov i dr. Moskva, Gos.nauchn.izd-vo "Bol'shaia sovetskaia entsiklopediia." Vol.2. M - IA. 1959. 467 p. (MIRA 12:7)

1. Redaktsiya istorii estestvoznaniya i tekhniki Bol'shoy Sovetskoy Entsiklopedii (for all except Zvorykin, Kosti). (Scientists) (Technology--Biography)

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ZVORYKIN, Anatoliy Alekseyevich, doktor ekonom.nauk; DUBROVSKIY, Yu.N., red.; ATROSHCHENKO, L.Ye., tekhn.red.

[Economic efficiency of production automation] Ekonomicheskaia effektivnost' avtomatizatsii proizvodstva. Moskva, Izd-vo "Znanie," 1960. 45 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.3, Ekonomika, no.34). (MIRA 13:12)

(Automation) (Labor productivity)
(Costs, Industrial)

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ZVORYKIN, Anatoliy Alekseyevich, prof.; KIRZHNER, David Mironovich; KUNDIN, Mikhail Borisovich, inzh.; RACHKOVSKIY, S.Ya., prof., otv. red.; ASTAKHOV, A.S., kand. ekonom. nauk, otv. red.; GOLUBYATNIKOVA, G.S., red. izd-va; PROZOROVSKAYA, V.L., tekhn. red.

[Economics of the mining industry] Ekonomika gornoi promyshlennosti. Izd.3., perer., dop. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1961. 439 p. (MIRA 14:9)
(Mineral industries)

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Zvorykin, Anatoliy Alekseyvich

Ekonomika gornoy promyshlennost! [by] A.A. Zvorykin, D.M. Kirzhner [i] M.B. Kundin. Izd. 3., perer: dop. Moskva, Gosgortekhizdat, 1961.
439 p. tables.
Bibliography: p. 432-433.

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ZVORYKIN, A.

Automation of capitalist production is a disaster for the workers. Sots. trud 6 no.5:30-40 My '61. (MIRA 14:6)
(Automation--Economic aspects)
(Labor and laboring classes)

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"Opredeleniye kul'tury i mestmaterial'noy kul'tury v obshchey kul'ture."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.

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ZVORYKIN, A. A.

Ekonomika ugol'noy promyshlennosti SSSR (by) A.A. Zvorykin, D. M. Kundin. I zd. 2, perer I dop. Moskva, Ugletekhizdat, 1954. 427 p. tables. 23 cm. Bibliography: p. (425)

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Zvorykin, A A

Ekonomika ugol'noy promyshlennosti SSR (by) A.A. Zvorykin, D.M. Kirzhner i M.B. Kundin. Izd. 2, perer 1 dop. Moskva, Ugletekhizdat, 1954.

427 p. tables. 23 cm.

Bibliography: p. (425)

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ZVORYKIN, A.A.; MILONOV, Yu.K., otv. red.

[History of technology] Istoriia tekhniki. Moskva, Izd-vo sots.-ekon.lit-ry, 1962. 772 p. (MIRA 16:9)
(Technology)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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CHERNYSHEV, Vladimir Ivanovich; ZVORYKIN, A.A., otv. red.; KLESHCHINOV, M.A., red. izd-va; POLYAKOVA, T.V., tekhn. red.; GOLUB', S.P., tekhn. red.

[From the history of technical development in the first years of the Soviet regime, 1917-1927] Iz istorii razvitiia tekhniki v pervye gody sovetskoi vlasti, 1917-1927. Moskva, Izd-vo Akad.nauk SSSR, 1962. 316 p. (MIRA 15:7)
(Industrialization) (Economic development)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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ZVORYKIN, A.A., doktor ekon.nauk, prof.; OS'MOVA, N.I., nauchnyy sotr.; CHERNYSHEV, V.I., kand.tekhn.nauk; SHUKHARDIN, S.V., kand.tekhn.nauk; MILONOV, Yu.K., kand.ekon.nauk, otv.red.; BAKOVETSKIY, O., red.; STREPETOVA, M., mladshiy red.; MOSKVINA, R., tekhn. red.

[History of technology] Istoriia tekhniki. [By] A.A.Zvorykin i dr. Moskva, Sotsekgiz, 1962. 772 p. (MIRA 15:8)

1. Akademiya nauk SSSR. Institut istorii yestestvoznaniya i tekhniki.

(Technology)

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SHUKHARDIN, S.V.; ZVORYKIN, A.A., redaktor; NEMCHENKO, B.C., redaktor; ZELENKOVA, Ye.V., tekhnicheskiy redaktor.

[Georg Agricola] Georgii Agrikola. Moskva, Izd-vo Akademii nauk SSSR, 1955. 205 p. (MLRA 9:5)
(Agricola, Georg, 1494-1555)

"APPROVED FOR RELEASE: Thursday, September 26, 2002 CIA-RDP86-00513R002065720002-7
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BROMBERG, Viktor Aleksandrovich; GAMAYUNOV, Nikolay Ivanovich; ZVORYKIN, Aleksey Dmitriyevich; KUDRYAVTSEV, Vitaliy Vasil'yevich; TEVEROVSKIY, Yevgeniy Ivanovich; EPSHTEYN, Lev Abramovich; SHIROKOVA, M.M., tekhn. red.

[Mechanization of the manufacture of electrical insulating materials of winding insulation, and drying as well as saturating operations] Mekhanizatsiia proizvodstva elektroizoliatsionnykh materialov, izoliatsionno-obmotochnykh i sushil'no-propitochnykh rabot. By V.A.Bromberg i dr. Moskva, Gos. energ.izd-vo, 1961. 99 p. (MIRA 15:2)
(Electric insulators and insulation)

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Protecting magnesia cement objects from humidity. A. Ya. Zvonkikin. *Bull. Inst. polytech. Ivanovo-Voznesensk* **15**, 201–6(in German 206–7)(1930).—S describes tests on different plates which were made from magnesia cement treated with varnish (boiled linseed oil) to ascertain the penetration of humidity into these objects. The tests are tabulated and show that plates satd. with varnish are fairly well protected against humidity.

M. V. Kosmodiy

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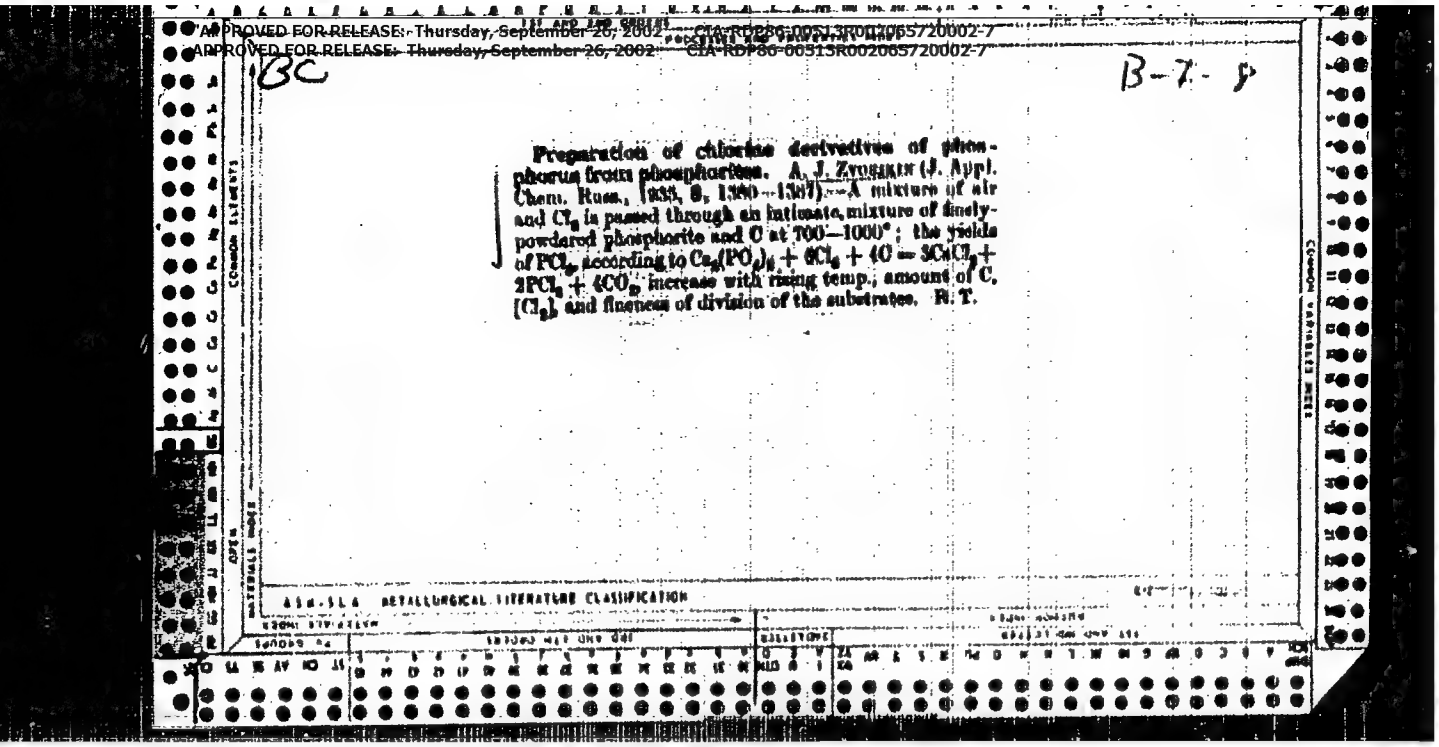

18C

B-7-9

Preparation of chlorine derivatives of phosphorus from phosphorites. A. I. Zvyagin (J. Appl. Chem. Russ., 1935, 8, 1380—1387).—A mixture of air and Cl_2 is passed through an intimate mixture of finely-powdered phosphorite and C at 700—1000°; the yields of PCl_3 according to $Ca_3(PO_4)_2 + 6Cl_2 + 4C = 3CaCl_2 + 2PCl_3 + 4CO_2$ increase with rising temp., amount of C, $[Cl_2]$ and fineness of division of the substrates. R. T.

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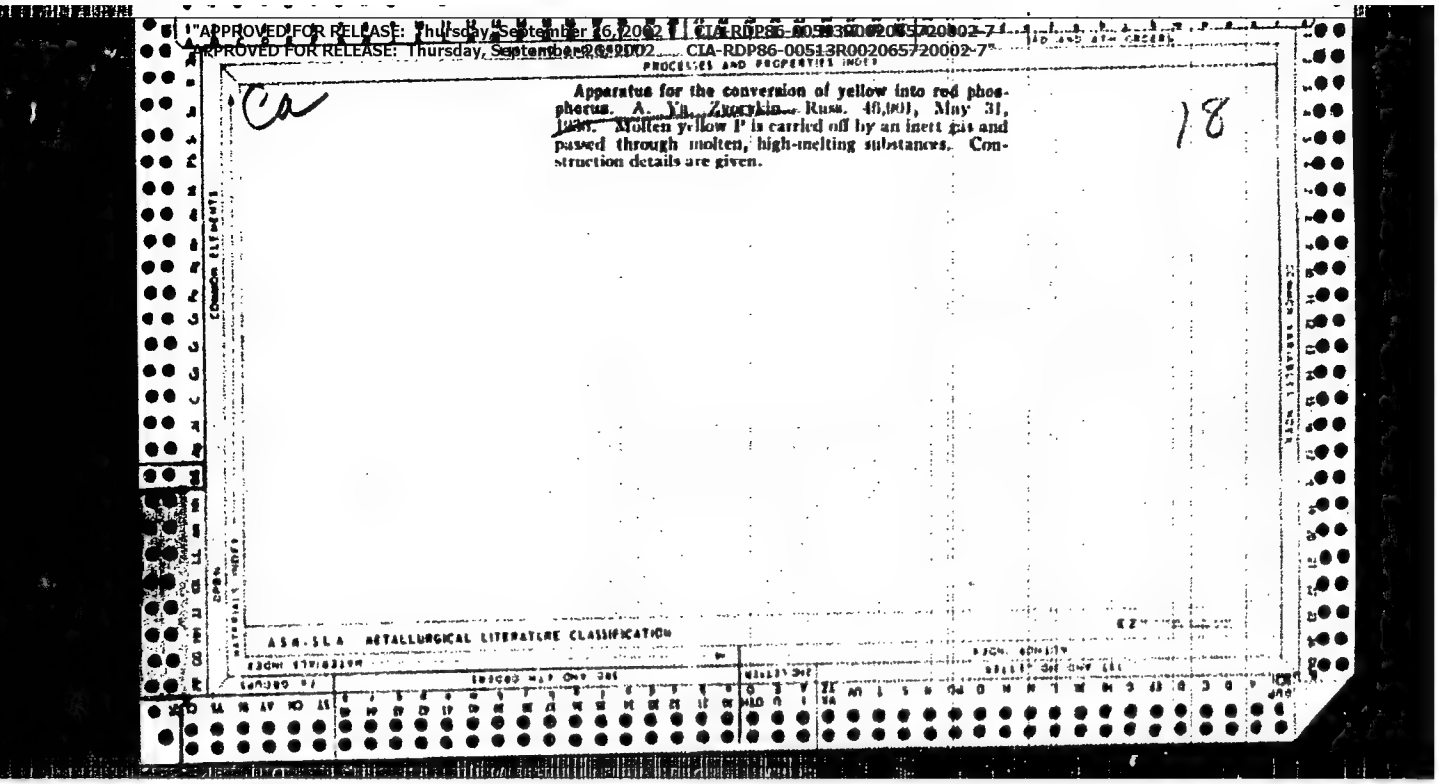

PROCESSES AND PROPERTIES INDEX

Ca

18

Apparatus for the conversion of yellow into red phosphorus. A. Ya. Zinovkin. Russ. 46,801, May 31, 1937. Molten yellow P is carried off by an inert gas and passed through molten, high-melting substances. Construction details are given.

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Decomposition of sulfates with chlorine. A. Ya. Zvonukin, *J. Applied Chem.* (U. S. S. R.) 9, 1-8(1936); cf. C. A. 30, 1308⁹.—Finely ground Ca, Ba, Sr and Na sulfates were heated at 830-1050° in an elec. muffle furnace in a stream of Cl. Under identical conditions at 1050° the yields of $CaCl_2$, $BaCl_2$ and NaCl were 42.52, 69.2 and 75.0% theoretical. Lengthening the reaction time and increase in quantity of Cl used improves the yield. Addn. of NaCl (about 6%) to sulfates is beneficial but SiO_2 has an unfavorable effect. C is also effective but interferes with purification of products. V. A. K.

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BC

A-1

Dynamics of preparation of red phosphorus. I. A. J. Zvyagintsev (J. Appl. Chem. Russ., 1936, 9, 779—786).—Complete conversion of white into red P is attained in 15—30 min. at 400—500°. Red P, Fe_2O_3, CuO, SiO_2, U_3O_8, and Se are without catalytic action. R. T.

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PROCESSES AND PROPERTIES INDEX

Ca

6

Dynamics of red phosphorus production. I. A. Ya. Zvornikin. *J. Applied Chem.* (U. S. S. R.) 9, 771-88 (in English 780(1936)). Lab. expts. in the production of red P are described. Yellow P, with and without the addns. of catalysts, was charged into a glass-stoppered ampoule and the stopper was tightly sealed with a mixt. of Na_2SiO_3 and CaO. The ampoule, inserted into a sealed glass tube, was submerged into sand and heated in an elec. furnace at 220-500° for various periods of time. To det. the degree of allotropic conversion, the reaction ampoule was crushed, the contents were treated with CS_2, the red P was filtered off by suction through a Schott porous filter and the filter, after drying in the air and at 80° in a drying oven, was weighed. The rate of the allotropic conversion is a function of time and temp. Heating yellow P at 220-50° for 3-47 hrs. resulted in a product contg. 16.9-69% red P. Heating at 320-50° for 18-20 hrs. yielded a mixt. with 71.9-6.1% red P. A 100% conversion was effected at 400° and 500° in 1 hr. to 1 hr. and 20 min. The addns. of red P, silica gel, Fe, Fe_2O_3, Sc, U_3O_8 and CaO failed to catalyze the reaction. Increasing time and temp. increased the hardness of the red P and the intensity of its coloration from a bright red to a deep violet.

Chas. Blanc

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B C

A-1

Quaternary system K_2O-NH_3-P_2O_5-H_2O. Solid solutions in the system KH_2PO_4-$NH_4H_2PO_4$-H_2O. N. S. Domanovskaja and A. J. Zyrjanin (Kalii, 1937, No. 2, 24—29).—The 25° and 50° isotherms have been determined. The results of Askenasy and Nessler (A., 1930, 872) indicating the existence of a continuous series of solid solutions have been confirmed. D. G.

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CP

2

The solid solutions of the system potassium dihydrogen phosphate-ammonium dihydrogen phosphate-water. A. Ya. Zvorykin and V. G. Kuznetsov. *Bull. acad. sci. U. R. S. S., Classe sci. math. nat., Sér. chim.* 1938, No. 1, 195-200 (in English 201).—The soly. isotherms of the system at 0°, 25° and 50° were investigated. The presence of continuous series of solid solns. was observed and confirmed by x-ray investigation of the solid phases having a compn. KH_2PO_4 0-41.65 and $NH_4H_2PO_4$ 0-33.48%.

A. A. P.

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PROCESSES AND PROPERTIES INDEX

Gypsum problem in the Soviet Union. N. I. Buyalov and A. Ya. Zvorykin. *Ann. secteur anal. phys.-chim., Inst. chim. gén.* (U. R. S. S.) 11, 327-36 (1938). A review of the results of a geol. survey in the Western Kazakhstan with a discovery of some 300 complex salt domes and large veins of gypsum and anhydrite with recommendations for the investigation of the geochem. and petrographic properties and com. exploitation of the deposits in the light of American practice with similar deposits in Texas and Louisiana. Chas. Blanc

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CA

13

Fertilizers. A. Ya. Zyorykin. Russ. 56,095, Nov. 30, 1939. Solns. contg. 35-6% ammonium phosphate are treated with a 2-18% soln. of KCl at temps. of −5 to +65°.

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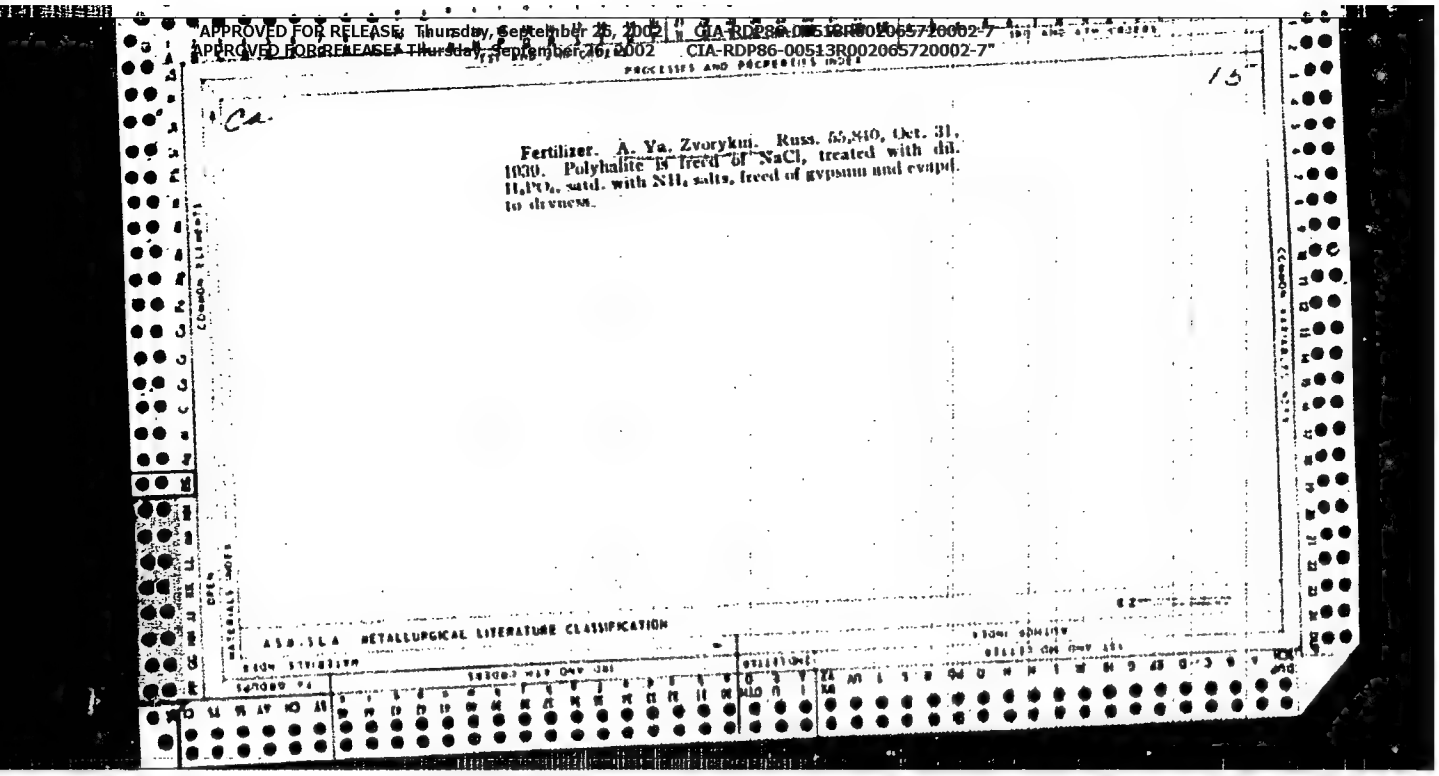

Ca

Fertilizer. A. Ya. Zvorykin. Russ. 55,840, Oct. 31, 1939. Polyhalite is freed of NaCl, treated with dil. H_3PO_4, satd. with NH_3 salts, freed of gypsum and evapd. to dryness.

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CA

28

The heating curves of carbohydrates. A. Ya. Zvonykin and A. L. Sokolovskii. *J. Applied Chem. (U. S. S. R.)* 12, 1430-2(1939).—A preliminary report concerning the heating curves of sucrose, citrose, levulose, caramel, a mixt. of invert sugar and sugar and sugar-molasses must is given. Each curve had 3 transformation periods as shown by the endothermic effects. The identification of the transformation products will be detd. in the near future.

A. A. Podgorny

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15

Concentrated fertilizers containing phosphorus, potassium, ammonia and magnesium from polyhalite. A. Ya. Zvorykin and V. Ya. Ketkovich. *Compt. rend. acad. sci. U. R. S. S.* 27, 464-5(1940)(in English).—Utilization of polyhalite ($K_2SO_4.MgSO_4.2CaSO_4.2H_2O$) is a most urgent problem, where large deposits are indicated in several districts of Western Kazakhstan and the Middle Volga. K. and Z. state that the industrial conversion of the American polyhalite into K_2SO_4 as suggested in the literature and in patents is extremely complicated and does not appear remunerative inasmuch as its ultimate product is a very weak K_2SO_4 soln. whose evapn. is hardly profitable. In view of the fact that many crops cultivated in their country, as tobacco, citrus plants or flax are in need of Cl-free fertilizers contg. K, NH_3, Mg and phosphate, the authors treated polyhalite with conc. H_3PO_4 and satd. the liquid mass with NH_3; products of the following percentage compn. were obtained: Water-sol. fraction NH_3 17.20, P_2O_5 26.80, CaO 0.48, MgO 0.37, K_2O 4.53, sulfate 15.93; salt compn. $(NH_4)_2HPO_4$ 43.68, K_2HPO_4 8.37, $CaSO_4$ 1.17, $MgSO_4$ 1.13, $(NH_4)_2SO_4$ 10.56 and water-insol. residue 24.97. After soln. in 20% HCl: NH_3 18.05, P_2O_5 35.79, CaO 0.01, MgO 1.27, K_2O 5.15, sulfate 19.94, residue insol. in HCl 0.50; salt compn. $(NH_4)_2HPO_4$ 50.37, K_2HPO_4 9.53, $CaSO_4$ 14.64, $(NH_4)_2SO_4$ 10.45, $MgSO_4$ 3.79, residue insol. in HCl 0.50. In order to lower the content of water-insol. fraction, the polyhalite was mixed with dild. conc. H_3PO_4 and the liquid fraction sepd. from the insol. fraction by filtration. The filtrate was then satd. with NH_3 and both liquid and insol. salt fractions were analyzed. Water-sol. fraction percentage compn. was: NH_3 13.82, P_2O_5 49.80, K_2O 3.10, sulfate 6.48, water-insol. residue 9.22; salt compn., KH_2PO_4 8.08, $NH_4H_2PO_4$ 73.27, $(NH_4)_2SO_4$ 8.01 and water-insol. residue 9.22. After soln. in 20% HCl: NH_3 14.41, P_2O_5 54.25, MgO 0.44, K_2O 4.08, sulfate 0.71, residue insol. in HCl 0.09; salt compn. KH_2PO_4 11.79, $NH_4H_2PO_4$ 77.93, $(NH_4)_2SO_4$ 0.23, $MgSO_4$ 1.31 and residue insol. in HCl 0.09. The above data favor the manuf. of concd. fertilizers from polyhalite according to the method patented by Z. (Russ. pat. 55,840, C. A. 34, 5008⁹). Further work on the phys. and chem. properties of the product with reference to its utilization in agriculture and to its equil. diagram is in progress.

W. A. Cook

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CA

18

The relation between the degree of conversion of sulfur in the oxidation of sulfides and the changes in the solid and the gaseous phase. A. Ya. Zvorykin. *Akad. Nauk S.S.S.R., Referaty, Otdel. Khim. Nauk* 1945, 31.—The degree of conversion Z (%) of S into SO_2 on roasting can be detd. indirectly from the amt. b of SO_2 (in g.) in the gas and the increase of wt. d of the sample, by $Z = 13750\,(d + 2.25\,b)/am$ where a = initial wt., m = % sulfide in the sample. N. Thon

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Application of physicochemical analysis to the study of complex catalysts. The activity of the oxides of cobalt, nickel, and copper in the decomposition of hydrogen peroxide. A. Yu. Zavorykin and F. M. Perel'man. *J. Phys. Chem.* (U.S.S.R.) 20, 1095–1101 (1946) (in Russian).—The reaction consts. of the decompn. of H_2O_2 in the presence of equimol. amts. of CuO, a Co oxide, and Ni_2O_3 were in the ratio 0.013:1.21:0.020. Among the many binary and ternary mixts. of these oxides only those contg. about 80 at.% of Co and 20% of Ni or about 80% of Co, 15% of Ni, and 5% of Cu were considerably more active than the Co oxide; in their presence the reaction const. reached 1.40. J. J. Bikerman

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ZVORYKIN, A. YA.

"Concerning the Reactions of Oxides and Salts in Solid State." Sub 29 Sep 47, Moscow Inst of Fine Chemical Technology imeni M. V. Lomonosov

Dissertations presented for degrees in science and engineering in Moscow in 1947

SO: Sum No. 457, 18 Apr 55

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APPROVED FOR RELEASE: Thursday, Sep

the purpose. Metal chlorides were
their gels. The suspension was thoroughly shaken, the ppt. allowed
to settle, and its vol. observed. This procedure was re-
peated over a number of days. As the ppt. aged, its vol.
contracted. Immediately after shaking, the contraction
was rapid and after appreax. 13-15 min. it leveled off.
The results of the observations were plotted, with time in
min. on the abscissa and vol. in cc. on the ordinate. A
tangent drawn from the point where the curve leveled
off (13-15 min.) and extended to the ordinate gave the
vol. assumed to be the max. that would be reached by the
ppt. immediately after shaking if it were uniformly dis-
persed and if it were not acted upon by gravity. This
vol. decreased as the hydroxide aged and it was different
for different hydroxides. The ratio of the vol. assumed by

a hydroxide when it settles freely in a water-filled cylinder
and the max. vol. of the same hydroxide is referred to as the
"active vol." Each of the hydroxides had its own active
vol., which diminished with age. Plotting log t (time) as
abscissa and log v (vol.) as ordinate gave a series of straight
lines representing the change of the active vol. with time.
From these curves it can be seen that the stability of hy-
droxides decreases in the order Mn, Fe, Ni, Co, and Cu.
The results were tested on mixed Co and Cu hydroxide
catalyst. The activity of these catalysts was parallel to
changes in their structure.

M. Booth

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Solid solutions of potassium and ammonium phosphates. N. S. Kurnakov, A. Ya. Zvyrykin, and V. Ya. Ketkovich. *Izvest. Sektora Fiz.-Khim. Anal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* 16, No. 3, 108-98 (1948).—The purpose was to ascertain the optimum conditions for producing $mKH_2PO_4 \cdot nNH_4H_2PO_4$ to be used as a concd. fertilizer free of Cl. First was investigated the quaternary aq. system $NH_4H_2PO_4 + KCl \rightleftharpoons KH_2PO_4 + NH_4Cl$ at 25°. To this end were studied $KH_2PO_4 + NH_4H_2PO_4 + H_2O$, $KH_2PO_4 + KCl + H_2O$, $KCl + NH_4Cl + H_2O$, and $NH_4Cl + NH_4H_2PO_4 + H_2O$. The results were plotted in the form of a space diagram projected on its quadrangular base $NH_4H_2PO_4$-KH_2PO_4-KCl-NH_4Cl. Next were detd. the solv. of KCl and NH_4Cl in satd. solns. of $(NH_4)_2PO_4$ at various concns. of NH_3 at 25 and 0°. The results are tabulated. The phase diagrams indicated a simple and effective process for the production of $mKH_2PO_4 \cdot nNH_4H_2PO_4$ consisting of passing NH_3 into a soln. of tech. H_3PO_4 and KCl. The solid phase was sepd. in a centrifuge. In this step 80-90% of the used P_2O_5 is used up. The mother liquor contg. the balance of H_3PO_4 is satd. with NH_3, thereby pptg. $(NH_4)_2HPO_4$. This gives off NH_3, leaving $(NH_4)_2HPO_4$. In these 2 steps 95-99% of the P_2O_5 is utilized. The 2nd mother liquor can be evapd. to yield $KCl.NH_4Cl$, or, if desired, glaserite.

M. Hosch

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ZVORYKIN, A. Ya

32537. ZVORYKIN, A. Ya i TIKCHINA, N. I. Spekanie soley i okislov. Zhurnal prikl. khimii, 1949, No 10, s. 1063-67

SO: Letopis' Zhurnal'nykh Statey, Vol. 44, Moskva, 1949

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CA

Irregular multidimensional figures in physicochemical analysis. F. M. Perel'man and A. Ya. Zyorykin (N. S. Kurnakov Inst. of Gen. and Inorg. Chem., Acad. Sci. U.S.S.R.). *Izvest. Sektora Fiz.-Khim. Anal., Inst. Obshchei i Neorg. Khim., Akad. Nauk S.S.S.R.* 19, 144-50 (1949).—The use of multidimensional diagrams for presentation of the compn. and properties of complex systems is discussed. The geometry of such figures is analyzed. M. Hosch

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Sintering of salts and oxides. A. Va Zaurykin and N. I. Timokhina. *J. Applied Chem.* (U.S.S.R.), 22 [10] 1083-87 (1949).—Powders of CaF_2 were fired in a porcelain crucible at 400°, 500°, 600°, and 700°C., while powders of SiO_2, $CaCO_3$, and Fe_2O_3 were fired at temperatures from about 900° to 1100°. The compressive strength of the sintered shapes was determined under a constantly increasing load. Curves of strength vs. temperature indicate that strength of sintering is a characteristic of the solid material and reflects the changes occurring during the various temperature intervals. Experimental results support the following mechanism of sintering: Sintering is above all a diffusion of particles in the solid material; the mobility of particles and diffusion increase with rising temperature. The individual particles make contact in some places only, so that at first diffusion takes place gradually at these points of contact. In determining the strength of sintering, destruction takes place chiefly at these points of diffusion because here the particles are bound to one another less strongly than in the original crystalline material. As a result of the crushing of the shape, the graining of the material changes and, in addition to the original grains, larger and smaller grains are also obtained. R.Z.K.

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CA

Sintering of carbonates. A. Ya. Zvorykin. *Zhur. Prikład. Khim.* 24, 1131–8(1951).—Carbonates of Li, Na, Be, Mg, Ca, Sr, Cd, and Ba were subjected to temps. between 100 and 1000°. As was proved for chlorides (*C.A.* 44, 802*f*) the change of mech. strength on sintering depends on the energy of crystal lattices. For energy computation the formula by Kapustinsky was used. $U = 287.2\,[\Sigma nZ_1Z_2/(r_1 + r_2)]\,[1 - (0.345/(r_1 + r_2))]$, where $r_1 + r_2$ = sum of ionic radii, Σn = no. of ions, and Z_1 and Z_2 = valencies of ions.

S. Sirelkoff

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ZVORYKIN, A.Ya.; PEREL'MAN, F.M.

Solubility isotherm 25° of the system $(NH_4)_2MoO_4$—$(NH_4)_2SO_4$—H_2O. Khim.redk.elem. no.1:52-57 '54. (MLRA 8:3)

1. Institut obshchey i neorganicheskoy khimii im.N.S.Kurnakova AN SSSR.
(Solubility) (Ammonium salts)

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ZVORYKIN, A.Ya., kandidat khimicheskikh nauk.

New concentrated non-chlorinated fertilizer. Vest.AN SSSR 24 no.3:64-66 Mr '54. (MLRA 7:3)

(Fertilizers and manures)

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ZVORYKIN

ZELIKMAN, A.N.; SAMSONOV, G.V.; KREYN, O.Ye.; STEPANOV, I.S., inzhener, retsenzent; TANAYAYEV, I.V., retsenzent; POGODIN, S.A., professor, doktor, zasluzhennyy deyatel' nauki i tekhniki, retsenzent; RODE, Ye.Ye., professor, doktor, retsenzent; ABRIKOSOV, N.Kh, doktor khimicheskikh nauk, retsenzent; SHAMRAY, F.I., doktor khimicheskikh nauk, retsenzent; MOROZOV, I.S., kandidat khimicheskikh nauk, retsenzent; BOOM, Ye.A., kandidat khimicheskikh nauk, retsenzent; NIKOLAYEV, N.S., kandidat khimicheskikh nauk, retsenzent; ZVORYKIN, A.Ya, kandidat khimicheskikh nauk, retsenzent; BASHILOVA, N.I., kandidat khimicheskikh nauk, retsenzent; VYSOTSKAYA, V.N., redaktor; KAMAYEVA, O.M., redaktor; ATTOPOVICH, M.K., tekhnicheskiy redaktor

[Metallurgy of rare metals] Metallurgiia redkikh metallov. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1954. 414 p. (MLRA 7:9)

1. Chlen-korrespondent Akademii nauk SSSR (for Tananayev)
(Metals, Rare--Metallurgy)

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The solubility isotherm in the system of paratungstate and ammonium sulfate at 25° [illegible] Zhurnal [illegible] Chem. [illegible] Redkoh Elementen [illegible] Nauk [illegible] Nauk [illegible] 1955, No. 2, 66-7. The solubility isotherm at 25° of $(NH_4)_2SO_4$-$(NH_4)_2W_2O_7$-H_2O was detd., and the results are shown graphically. In aq. neutral [illegible] the NH_4 paratungstate [illegible]

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PERELMAN, Yakov Isidorovich. ZHORYAN, Aleksandr Nikolayevich; NIKOLAYEV, N.S., doktor khimicheskikh nauk, nauchnyy redaktor; GOLUBKOVA, V.A., redaktor; YUSFINA, N.L., tekhnicheskiy redaktor

[How chemistry originated and with what it is concerned] Kak vozniklа khimiia i chem ona zanimaetsia. Moskva, Goskul'tprosvetizdat, 1956. 14 p. and 5 l. (MLRA 10:2)
(Chemistry--History)

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Physicochemical principles in the production of a new form of chlorine-free concentrated fertilizers. Zhur.neorg.khim. 1 no. 7:1523-1532 Jl '56. (MLRA 9:11)

(Phosphates)

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5(2) SOV/2252

Akademiya nauk SSSR. Institut obshchey i neorganicheskoy khimii

Redkiye metally (Rare Metals) Moscow, Izd-vo AN SSSR, 1957. 155 p. 4,500 copies printed. Errata slip inserted.

Ed. of Publishing House: Th. S. Shlyamina; Tech. Ed.: A. A. Pavlovskiy; Editorial Board: I. V. Tananayev (Resp. Ed.), S. A. Popova, Yu. Ya. Kuz, V. G. Stoker, and O. P. Bogush (Secretary).

PURPOSE: The book is intended for scientists and engineers concerned with the study and utilization of rare elements.

COVERAGE: The book is a collection of papers on investigations in the chemistry of rare elements conducted at the Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov). No personalities are mentioned. There are 145 references: 99 Soviet, 23 English, 11 German, 10 French, 1 Italian, and 1 Japanese.

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AUTHORS: Perel'man, F. M., Zvorykin, A. Ya., Yakubovskaya, T. N.

TITLE: Some Difficultly Soluble Salts of the Heteropolyacid of Germanium and Silicon (Nekotoryye malorastvorimyye soli geteropolikislot germaniya i kremniya)

PERIODICAL: Zhurnal Neorganicheskoy Khimii, 1958, Vol. 3, Nr.6, pp. 1374 - 1380 (USSR)

ABSTRACT: In the present paper the difficultly soluble ammonia, rubidium and cesium salts of the germanium-and silicon-molybdenum-heteropolyacid were investigated. The synthesis of germanium-molybdenum and silicon-molybdenum-heteropolyacid as ammonia, rubidium and cesium salts was described. The following compounds were produced:

$1,75(NH_4)_2O.SiO_2.12MoO_3.5H_2O$ $1,7Rb_2O.SiO_2.12,2MoO_3.8,1H_2O$

$1,85(NH_4)_2O.GeO_2.12MoO_3.4,65H_2O$ $2Rb_2O.GeO_2.12MoO_3.9H_2O$

$1,54Cs_2O.SiO_2.11,5MoO_3.6,8H_2O$

$1,82Cs_2O.GeO_2.11,5MoO_3.6H_2O$

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Some Difficultly Soluble Salts of the Heteropolyacid of Germanium and Silicon

The x-ray analyses show that all these salts are isomorphous. The solubility of the ammonia, rubidium and cesium salts of the silicon-molybdenum, and germanium-molybdenum-heteropolyacids at 25°C is investigated. The solubility of ammonia salt of Si-Mo-heteropolyacid is 7,55% of rubidium salt of Si-Mo-heteropolyacid is 0,475%, of cesium salt of Si-Mo-heteropolyacid 0,123%, of ammonia-Ge-Mo-acid 7,78%, of Rb-Ge-Mo-acid 0,90% and Cs-Ge-Mo-acid 0,075%. The solubility of all six salts was also determined in aqueous sulfuric acid solutions of ammonia and rubidium salts at a concentration of 1,5 - 40% sulfuric acid and of cesium salt at a concentration of 1,5-25% sulfuric acid. Also the solubility of cesium salts of the above mentioned heteropolyacids in nitric solutions at concentrations of 2% and 5,3% HNO_3 as well as the solubility of oxalic acid at concentrations of 2-9% HNO_3 was determined. Sulfuric acid considerably reduces the solubility of the ammonia, rubidium and cesium salts of the silicon-molybdenum-, and germanium-molybdenum-

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Some Difficultly Soluble Salts of the Heteropolyacid of Germanium and Silicon

-heteropolyacids. On this occasion the solubility of the ammonia salts of the above mentioned heteropolyacids is ten times greater than the solubility of the corresponding rubidium salts. The cesium salt of the Ge-Mo-heteropolyacid has a solubility ten times smaller than that of the corresponding Rb-Ge-Mo-acid. Cesium salt of the Si-Mo-acid has a solubility hundred times smaller than the corresponding Rb-Mo-acid. It was found that the salts of the Gr-Mo-heteropolyacids are more easely soluble than the corresponding salts of the Si-Mo-acids almost in all cases especially in concentrated acids. Cesium salt of the Si-Mo-acid shows the smallest solubility. Its solubility in aqueous sulfuric solution is 0,004-0,005%. The solubility of cesium salt of the Ge-Mo-acid in the same sulfuric solution is 0,04%. There are 5 figures, 8 tables, and 19 references, 8 of which are Soviet.

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78-3-6-14/30

Some Difficultly Soluble Salts of the Heteropolyacid of Germanium and Silicon

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova, AN SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, AN USSR)

SUBMITTED: May 21, 1957

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1. Germanium compounds 2. Silicon compounds 3. Heteropolyacids --Salts 4. Salts--Solubility 5. Chemical compounds--Production

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76-32-3-24/43

AUTHORS: Zvorykin, A. Ya., Perel'man, F. M., Shakhova, S. K.

TITLE: On the Catalytic Activity of Rare Elements in the Reaction of the Decomposition of Hydrogen Peroxide I (O kataliticheskoy aktivnosti redkikh elementov v reaktsii razlozheniya perekisi vodoroda. I.)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol 32, Nr 3, pp 654 - 658 (USSR)

ABSTRACT: Mixed catalysts of salts of rare elements are investigated in the present paper, the attention being focused on the influence of the ratio of catalyst components, as well as that of the temperature and the pH, upon the catalytic activity. In order to bring about a simultaneous mixture of both catalyst components with the hydrogen peroxide solution, a glass container was constructed in which two little dishes with the catalysts on a glass holder are located, from where they fall into the liquid upon mechanical agitation of the system. The velocity of decomposition of hydrogen peroxide was measured at 25°C and a pH of 8.0. The experiments performed with niobium oxalate

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On the Catalytic Activity of Rare Elements in the Reaction of the Decomposition of Hydrogen Peroxide

showed a negative catalytic action of niobium upon other catalysts, especially cobalt chloride. Sodium molybdate in combination with copper chloride(Na_2MoO_4-$CuCl_2$) showed an increase of the catalytic action, which exceeded that of the individual components several times. Investigations with zirconium sulfate showed that in the system zirconium-sulfate/manganese-dioxide, the curve of the catalytic activity contains a maximum from which a complicated change of the catalytic activity may be deduced. A table of the changes of velocity and of the values of the reactior constant of the last-mentioned system is given from which it may be seen that the activity of zirconium sulfate at the beginning of the examination is higher, that it then drops to a lower value and remains constant. There are 4 figures, 1 table, and 9 references, 6 of which are Soviet.

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76-32-3-24/43

On the Catalytic Activity of Rare Elements in the Reaction of the Decomposition of Hydrogen Peroxide

ASSOCIATION: Akademiya nauk SSSR, Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (AS USSR, Institute of General and Inorganic Chemistry imeni N. S. Kurnakov)

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5(4)

SOV/76-33-2-34/45

AUTHORS: Perel'man, F. M., Zvorykin, A. Ya, Shakhova, S. K.

TITLE: The Catalytic Activity of the Rare Elements in the Decomposition of Hydrogen Peroxide II (O kataliticheskoy aktivnosti redkikh elementov v reaktsii razlozheniya perekisi vodoroda II)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2, pp 452 - 456 (USSR)

ABSTRACT: The method of the work reported here was the same as was used in the previous paper, i.e., a simultaneous addition of both catalysts at the beginning of the reaction. Investigated were sodium gallate (I), thorium nitrate (II), titanium sulfate (III), and germanium chloride (IV), alone and together with the chlorides of cobalt, copper, and iron also of MnO_2 at 25°C and pH = 8.0. It was observed that a combination of (I) with $CuCl_2$ increased the catalytic activity and that this was greater than the additive values of the single components. All the catalysts of this system are unstable and lose their activity quickly (Fig 1). The system (II) - $CuCl_2$

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and (II) - MnO_2 (Figs 2,3) show also in increased catalytic effect upon the decomposition of H_2O_2. With the first system the activity is doubled and with the second system the activity is 4.6 times the additive value of the components using a content of 30% (II). The system (II) - MnO_2 is more stable in its catalytic activity than the above mentioned combinations of (I). An increase of 5 to 2.5 times in activity above the additive values of the components was observed for the (III)-$CuCl_2$ and (III) - $CoCl_2$ systems, and the maximum activity was found to occur with a content of 50% (III) (Figs 4,5). The (III)-$CoCl_2$ systems are high in activity but very unstable, while (III)-$CuCl_2$ are stabler combinations. In the (IV)-$CuCl_2$ system a smaller increase in activity was observed (Fig 6). The experimental results show that the maximum activity occurs with the compositions of a 1:1 molar ratio of the components. There are 6 figures and 3 references, 2 of which are Soviet.

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The Catalytic Activity of the Rare Elements in the Decomposition of Hydrogen Peroxide II SOV/76-33-2-34/45

ASSOCIATION: Akademiya nauk SSSR, Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (Academy of Sciences, USSR, Institute for General and Inorganic Chemistry imeni N. S. Kurnakov)

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AUTHORS: Perel'man, F. M., Zvorykin, A. Ya., Demina, G. A.

S/078/60/005/04/034/040
B004/B016

TITLE: Investigation of the Solubility in the System $Y(NO_3)_3 - NH_4NO_3 - H_2O$ at 25 and 50°

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol 5, Nr 4, pp 960 - 963 (USSR)

ABSTRACT: The authors refer to the method of the fractional separation of lanthanides used in practice and quote a paper by G. G. Urazov and Z. N. Shevtsova (Ref 4). The purpose of the present paper is to clarify the conditions for the occurrence of the yttrium-ammonium-nitrate double salt. The results obtained according to the solubility method are presented in tables 1, 2 and in Schreinemakers' diagrams in figures 1,2. At 50° the solubility curve shows three branches corresponding to the crystallization of the three salts $Y(NO_3)_3 \cdot 4H_2O$, $Y(NO_3)_3 \cdot 2NH_4NO_3$, and NH_4NO_3. The double salt crystallizes at this temperature in the anhydrous state in the range of the concentrations of NH_4NO_3 from 18 to 44%, and of $Y(NO_3)_3$ from 66 - 48%. Its solubility in water amounts to 88% at 50°. At 25° the double salt could not be

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Investigation of the Solubility in the System $Y(NO_3)_3 - NH_4NO_3 - H_2O$ at 25 and 50°

obtained, although the diagram shows the corresponding branch. The authors assume that the crystallization of the double salt at this temperature is rendered difficult owing to the high viscosity of the solution. $Y(NO_3)_3$ crystallizes in the presence of NH_4NO_3 both at 25° and at 50° with four molecules of crystal water. There are 2 figures, 2 tables, and 6 references, 2 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

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B023/B066

AUTHORS: Zvorykin, A. Ya., Perel'man, F. M., Babiyevskaya, I. Z., Fedotova, T. N.

TITLE: Calcium and Iron Germanates

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 8, pp. 1717-1724

TEXT: The authors investigated systems of sodium germanate and calcium nitrate or iron nitrate in aqueous solutions with different ratios of the components. The formation of calcium metagermanate, $CaO.GeO_2.nH_2O$, and three iron germanates, $Fe_2O_3.GeO_2.nH_2O$, $Fe_2O_3.2GeO_2.nH_2O$, and $Fe_2O_3.3GeO_2.nH_2O$, was detected by Schreinemakers' method. Thermograms and X-ray diffraction patterns of the compounds mentioned above disclosed characteristic peculiarities and confirmed the chemical homogeneity of the resulting compounds. It was further found that the germanate $Fe_2O_3.GeO_2.nH_2O$ may be obtained with 15 and 2.5 molecules of hydration water, and that the

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germanate $Fe_2O_3 \cdot 2GeO_2 \cdot nH_2O$ still contains two H_2O molecules after drying at 120°C. All iron germanates were subjected to X-ray phase analysis at the laboratory of V. G. Kuznetsov. Table 1 shows the composition of the liquid phases and of the "residues" in the system Na_2GeO_3-$Ca(NO_3)_2$-H_2O, and Table 2 dto. in the system Na_2GeO_3-$Fe(NO_3)_3$-H_2O. Fig. 1 illustrates the composition of the solid phases in the system Na_2GeO_3-$Ca(NO_3)_2$-H_2O, and Fig. 2 dto. in the system Na_2GeO_3- $Fe(NO_3)_3$-H_2O. V. F. Zhuravlev is mentioned. There are 7 figures, 2 tables, and 10 references: 4 Soviet, 4 German, and 2 US.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences USSR)

SUBMITTED: March 10, 1959

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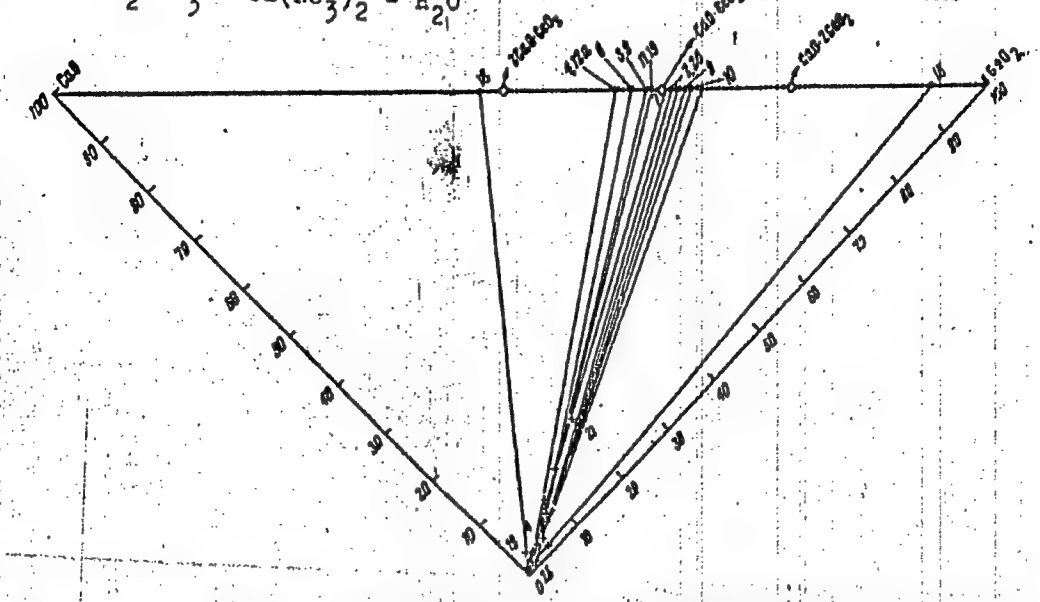
86489
S/078/60/005/008/022/031/XX
BC23/B066

Legend to Fig. 1: Fig. 1: Composition of the solid phases in the system Na_2GeO_3 - $Ca(NO_3)_2$ - H_2O.



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ZVORYKIN, A.Ya.; PEREL'MAN, F.M.

Oxidation of cobalt sulfide in the presence of sodium chloride. Zhur.prikl.khim. 33 no.4:765-768 Ap '60. (MIRA 13:9)
(Cobalt sulfide) (Oxidation)

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ZVORYKIN, A. Ya.

Sintering of some sulfates. Zhur.prikl.khim. 33 no.5:1019-1024 My '60. (MIRA13:7)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova AN SSSR.

(Sulfates)

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34866
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B110/B138

5.2600

AUTHORS: Perel'man, F. M., Zvorykin, A. Ya., Demina, G. A.

TITLE: The solubility isotherm (25°C) of the system $Pr(NO_3)_3$-$RbNO_3$-HNO_3-H_2O

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 7, no. 3, 1962, 641 - 644

TEXT: The formation of double nitrates of praseodymium and rubidium in the presence of HNO_3 was examined in a thermostat (25 ± 0.1°C). Liquid phase samples and residues were taken after the establishment of equilibrium (after 2 - 3 days). Chemically pure Pr_6O_{11} and Rb_2CO_3 were converted into $Pr(NO_3)_3 \cdot 6H_2O$ (Pr_6O_{11}, 40.96%) and into rubidium nitrate (Rb_2O, 62.66%) by means of HNO_3. Pr was precipitated by means of NH_4OH, annealed, and weighed as Pr_6O_{11}. Rb was weighed as perchlorate. Five solid phases were formed: (1) $Pr(NO_3)_3$; (2) $5RbNO_3 \cdot 4Pr(NO_3)_3$; (3) $7RbNO_3 \cdot 5Pr(NO_3)_3$; (4) $5RbNO_3 \cdot 2Pr(NO_3)_3$; (5) $RbNO_3$. The compositions next

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The solubility isotherm...

to $RbNO_3$ were examined at 30 - 36%, and those adjoining $Pr(NO_3)_3$ at 26 - 30% of HNO_3. The incongruent double salt $2\,Pr(NO_3)_3 \cdot 5RbNO_3$ only exists with $Pr(NO_3)_3$ concentration less than 10.09%. If the $Pr(NO_3)_3$ concentration is increased, $5\,Pr(NO_3)_3 \cdot 7RbNO_3$ crystallizes. Anhydrous $Pr(NO_3)_3$ crystallizes first and next, in the presence of not more than 3 - 4% of $RbNO_3$, the double salt $5RbNO_3 \cdot 4Pr(NO_3)_3$. However, only three salts could be synthesized: (1) anhydrous $Pr(NO_3)_3$ under the conditions of point 2 (Fig. 1); (2) the anhydrous, bright green, coarse-crystalline double salt $4Pr(NO_3)_3 \cdot 5Rb(NO_3)$ under the conditions of point 6; (3) the anhydrous, light green, fine crystalline double salt $2Pr(NO_3)_3 \cdot 5RbNO_3$ under the conditions of point 18. All three salts decompose at 85 - 90°C with the liberation of dark-brown vapors of oxides of nitrogen.
D. I. Mendeleyev and N. S. Kurnakov are mentioned. There are 2 figures, 1 table, and 4 references: 3 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: R. C. Vickery,

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PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; GAMZA, L.B.

Degree of polymerization of potassium metaphosphates at various temperatures. Izv. AN SSSR. Neorg. mat. 1 no.6:900-902 Je '65. (MIRA 18:8)

1. Institut obshchey i neorganicheskiy khimii imeni N.S. Kurnakova AN SSSR.

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PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; GAMZA, L.B.

Degree of polymerization of sodium metaphosphate at various temperatures. Izv. AN SSSR. Neorg. mat. 1 no.5:725-729 My '65. (MIRA 18:10)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

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PEREL'MAN, F.M.; ZVORYKIN, A.Za.; DEMINA, G.A.

Solubility isotherm (25°) in the system Nd $(NO_3)_3$ - RbNO3 - H_2O.
Zhur. neorg. khim. 8 no.7:1753-1755 Jl '63.
(MIRA 16:7)

1. Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova AN SSSR.
(Neodymium nitrate) (Rubidium nitrate)
(Solubility)

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ZVORYKIN, A.Ya.

Some inorganic polymers based on rubidium phosphates. Zhur.neorg.-khim. 8 no.2:274-277 F '63. (MIRA 16:5)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Rubidium phosphates) (Polymerization)

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ZVORYKIN, A.Ya.; RATNIKOVA, V.D.

Solubility isotherm (25°) in the system CsH_2PO_4 — $NH_4H_2PO_4$ — H_2O.
Zhur.neorg.khim. 8 no.4:1018-1019 Ap '63. (MIRA 16:3)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Alkali metal phosphates) (Solubility)

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L 12[illegible] EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG

ACCESSION NR: AP3003485 S/0078/63/008/007/1753/1755

59
58

AUTHOR: [illegible], P. M.; Zvory*kin, A. Ya.; Demina, G. A.

[illegible] solubility isotherm 25°) in the system Nd(NO sub 3) sub 3 - RbNO sub 3 - [illegible] sub 3 - H sub 2 [illegible]

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 7, 1963, 1753-1755

TOPIC TAGS: solubility, isotherm, HNO sub 3, rubidium nitrate, neodymium nitrate, praseodymium nitrate

ABSTRACT: The authors studied the quaternary system Nd(NO sub 3) sub 3 - RbNO sub 3 - [illegible] sub 3 - H sub 2 [illegible] at 25° in an interval of 25 - [illegible] sub 3 by the [illegible] method. It was found that two double salts of the composition 4Nd[illegible] [illegible] sub 3 times [illegible] NO sub 3 [illegible] properties [illegible] acid solutions [illegible]

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PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; DEMINA, G.A.

Solubility isotherm of the system $Pr(NO_3)_3 - RbNO_3 - H_2O$. Zhur. neorg.khim. 7 no.3:641-644 Mr '62. (MIRA 15:3)
(Praseodymium nitrate) (Rubidium nitrate)
(Systems (Chemistry))

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PEREL'MAN, F.M.; ZVORYKIN, A.Ya.; TARASOV, V.V.; ZEMLYA, O.A.

Thio salts of molybdenum and tungsten. Zhur.neorg.khim. 6 no.9: 1999-2002 S '61. (MIRA 14:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova AN SSSR.
(Molybdates) (Tungstates) (Systems (Chemistry))

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ZVORYKIN, A.Ya., VEYKINA, L.S.

Solubility isotherm of the system RbH_2PO_4 - H_2O at 25 . Zhur.neorg. khim. 6 no.11:2572-2575 '61. (MIRA 14:10)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Rubidium phosphate) (Ammonium phosphate) (Solubility)

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ZVORYKIN, A.Ya.; PEREL'MAN, F.M.; TARASOV, V.V.

Molybdenum and tungsten sulfides and oxysulfides. Zhur.neorg.khim. 6 no.9:1994-1998 S '61. (MIRA 14:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova Akademii nauk SSSR.
(Molybdenum sulfide) (Oxysulfides)